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JUNE, 1924

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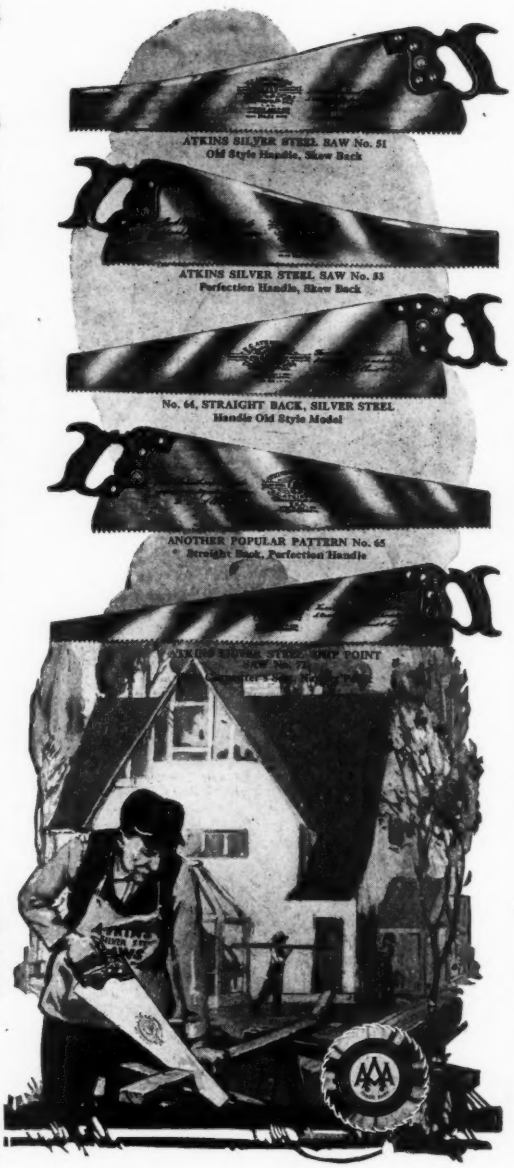
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INDUSTRIAL-ARTS MAGAZINE

Volume XIII JUNE, 1924 No. 6

A BUCKS COUNTY (PENNSYLVANIA) LANDMARK, by G. W. STOTTER.
GIFT OF ONE HUNDRED FRIENDS OF PITTSBURGH ART TO THE PITTSBURGH SCHOOLS.

Bringing Art to School Children

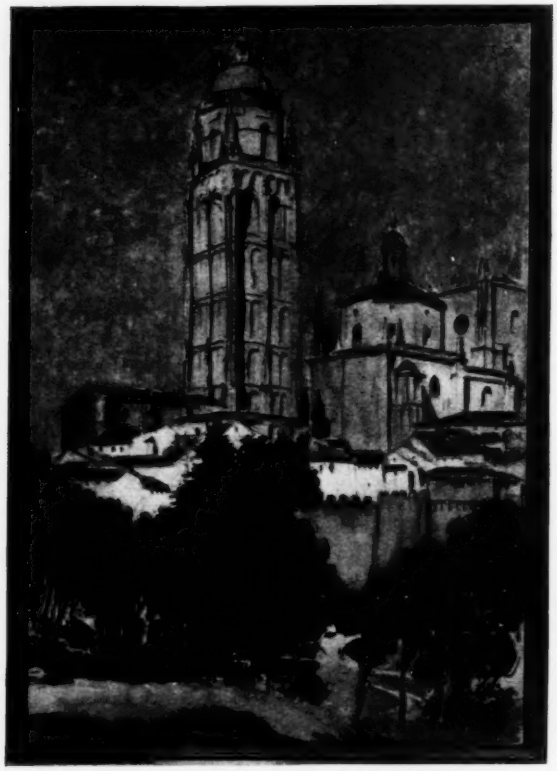
John L. Porter, Esq.

THERE are some things, for which we may justly envy coming generations, and none more to be coveted than their better health, their generally increased knowledge, culture, improved living conditions, and, *appreciation of art.* At the end of three generations *Art* will so fully have entered into the industrial world as to make present-day equipment look quite as old-fashioned and inefficient as some of the articles of Revolutionary times now appear to us.

We frequently hear people wishing that they might come back to this planet in a hundred years from now. Why? Because the great strides made in industrial, commercial, financial, and even social progress have during their own experience been of such material moment as to excite their curiosity; and, it is only to gratify that inquisitiveness which prompts the wish, for certainly the world will be so far advanced beyond present conditions, in that period, as to make one of this day and age quite as much of a curiosity as the then existents would prove to him.

The day is fast dawning in our industrial life when the machine, the lathe, the loom, the furnace, and all other devices will have been so improved both in form, appearance, and efficiency, that the operator will look with pleasure to the daily association with his mute mechanical helper, rather than to the detestation and wailing with which he now meets his daily task.

How this is all to come about, is of course a matter of evolution. The mechanic, the weaver, the puddler, and in fact the entire work-a-day-world will have to get a different viewpoint on their work. That is only pos-



"THE CATHEDRAL AT SEGOVIA, SPAIN."
BY VERNON WILSON.
PRESENTED IN 1924.

sible, to those of moderate education, by associating them even in their elementary development with something which will make them look above the daily grind to moments of relaxation which have discovered to them new joys and entertainment.

Our country is providing methods and places for all kinds of education, relaxation, exercise, entertainment, and inspiration, and in none of these have we made greater progress than in matters of Art.

In the beginning of things here in the United States we had a few men of ability as artists, and luckily so, else we should not be today possessed of the remarkably fine portraits of the progenitors who gave us this "land of the free and home of the brave."

Portraits, in the Colonial days, constituted a mark of affluence, social status, and political prominence and were the principal items of decoration in most well-to-do homes; and it was not until after the close of the Civil war that a general scramble for portraits of fathers and sons in uniform made this mark of family distinction to fade materially.

Immediately after the close of the Civil war there seemed to arise in our midst a type of artist who believed the general public might be induced to add to their portraits other items for wall decoration, and they began painting familiar landscapes, horses, cattle, dogs, and other belongings highly prized by their owners. This later led to the painting of prize-winning stock, race-horses, etc.

Looking back now we see that very few of these productions, other than the primitives, have survived the test of the past thirty years, and today practically all of the art productions from 1840 to 1890 have been consigned to the ash-barrel.

With the above facts and prophecies before us, let us look for a few minutes to what is already being done in certain quarters to hasten the day when art—music—flowers, and God's-great-out-of-doors will be our constant schoolmasters.

In Pittsburgh, in the year nineteen hundred sixteen, an art lover, recognizing the bitter struggle which had been going on for a long time in the efforts of certain artists to eke out a bare livelihood, while trying to show the citizens the beauty of the local hills, valleys, rivers, mills, and never-ending evidences of industrial activity, was aroused to the point of suggesting a co-operative plan to his friends which had for its objectives:

First, a *small opportunity,* but nevertheless *an opportunity* for artists to dispose of creditable paintings.

Second, the creation of an incentive for even better work.

Third, the increasing of the membership of the local art association, and,

Finally, the placing of all pictures purchased in more or less permanent show places.

The plan, as set up finally, consisted of a voluntary organization of one hundred subscribers who agreed to donate annually, ten dollars each, for a period of five years. These combined donations therefore constituted a fund of one thousand dollars available each year for purchases.

"GIRL WITH VIOLIN," BY MILAN PETROVITS.
PRESENTED IN 1924.

It was deemed desirable to select the purchases through some specific medium and at some specific period each year. The annual exhibition of the Associated Artists of Pittsburgh seemed to cover both these wants, so the plan specified that the one thousand dollars or such part as the committee seemed disposed to expend, would be used in the purchase of paintings shown at the aforesaid exhibition.

Thus far, our plan seemed to cover the delinquencies of the local situation, and our next problem was: What disposition shall we make of the pictures after they come into our possession? Then the founder conceived the idea of presenting the pictures to the public schools, in the belief that, if the children during the most impressionable period of their lives could be induced to show some interest in good pictures, they would carry away impressions which would soon begin to show in their home surroundings and, eventually, throughout the entire neighborhood. For if there is anything which even a moderately artistic temperament abhors, it is dirt, squalor, gloomy living quarters, rubbish, and filthy back-yards.

When the plan of donating our annual purchases was laid before the school authorities, it was cordially concurred in by the director of art and recommended for consideration to the superintendent of schools. The superintendent of public instruction gave the suggestion his unqualified endorsement and presented the matter to his board of education. The members of the board first evidenced a genuine surprise that any person or body of persons should undertake to *give anything* to the schools, and particularly something which promised some day to be not only an asset to the schools from the standpoint of actual intrinsic value, but a matter of great civic pride as well. Their acquiescence to the suggestion was most cordial and re-assuring, and, if the addresses of acceptance each year indicate at all the feeling of the school authorities toward this plan, then it may surely be said to be signally successful.

OLD MAN, BY M. PETROVITS.
PRESENTED IN 1921.

The director of art for the state of Pennsylvania has repeatedly said that Pittsburgh far surpasses any city, of which he has knowledge, in its attention to art in the schools, and attributes most of this success to the encouragement given the study, by the "One Hundred Friends of Pittsburgh Art."

The result of the first eight years' efforts of the organization is a collection of 40 paintings, by 33 artists, and so important are many of them they are frequently sought by the art museums of the country for exhibition purposes.

One painting in this collection has been awarded one of the principal prizes by the National Academy of Design in New York City, and the painting has been shown in many of the largest art institutions in the United States.

Eight thousand dollars' worth of paintings, in eight years, is our record of purchases and gifts, and today the public schools of Pittsburgh possess the nucleus of what will some day be a complete chronological record of Pittsburgh art from 1916, and which will also be an everlasting memorial to the generosity of each and every contributor to the fund which has made the collection possible, as the names of the members of the One Hundred Friends are attached to the back of each picture, as donated.

VERA, BY FRED A. DEMMLER.
PRESENTED IN 1917.

Because of removals from the city, deaths, withdrawals, and other causes, there occur vacancies among the One Hundred Friends, but their places are quickly filled by other friends who approve of the plan, and are glad to become identified with it.

To date, the plan of circulating the pictures, has been to show the entire collection in the various schools, but the number is now so large that a plan for showing the items individually will soon be tried in the belief that a larger number of pupils will be reached and, unconsciously, influenced in their daily contact with them.

The director of art and the supervisors have been most enthusiastic over the pictures as it gives them actual demonstrations for their talks, and visualizes much which would otherwise be difficult of explanation.

One very noticeable result of the school art collection, is the increasing attendance at the art gallery of the Carnegie Institute.

It only requires a few sentences in the occasional art talks, to say to the pupils of any grade, that if they like beautiful pictures, a visit to your local art institute on a Saturday or Sunday afternoon, or any evening during the week, will well repay the time spent. Such contact soon begets a habit which causes the pupils to visit every new exhibition announced at the gallery, and to talk about it to their companions, with the result that they soon, unconsciously, become not only interested in art matters, but even critical. Consequently it is not long until a framed, colored-photograph, print, illustration, or other evidence of taste begins to find itself in the home of the otherwise poor.

This first indication of "love of the beautiful" is the beginning of a cultural development, the outcome of which none can measure, nor even reasonably prophesy. The artistic and the beautiful of today must become the common-place of tomorrow and must contribute with religious and other influences to aid us in recovering from our unrest of extravagance, excitements, sexual abandon in dress, bad manners, disrespect and irreverence.

"STILL LIFE," by R. V. HUGHES.

CURTAINED WINDOW, A. A. READIO.

The reason so many people do not appreciate art in its various phases, is because they have never had the taste for it created until late in life, and it appeals to them then, only because of exceptional beauty in color, or because of peculiarity in design.

Nine-tenths of the viewers of art work know nothing whatever of the value of drawing, the mixing of color, the composition of a painting, or a sculptural group, the design of a building or monument, the intricacies of landscaping, the subtleness of decoration, the difficulties of carving, the patience of needlework and fabric manufacture, the ingenuity of pottery and glass making, and the hundred and one other qualities which must be either inherent or adjunct to perfection in art production.

The need of space for the hundreds of children seeking admission to our schools, and the supplying of a sufficient and proficient teaching force must of necessity have the first and continued thought of our school boards. Until those deficiencies are fully cared for, it is useless to expect any great interest from the governing bodies in this departure from old and established customs, or conventional educational efforts. It takes a live, wide-awake, up-to-date school board to appreciate a collaborative program such as is suggested by the Pittsburgh idea. Just here, it may be added parenthetically that few large cities are served by such efficient and sacrificing persons as constitute the Pittsburgh Board of Education, for our educational work has been entirely divorced from politics. The men and women who look after the welfare of our children, are selected from our best citizenship, by the Judges of our Courts of Common Pleas.

Art journals, in all the large cities of the country have frequently commented on the unique organization of the Hundred Friends of Art, its plan and accomplishments. It is with a great deal of satisfaction that we are now able to report like organizations in St. Louis, Baltimore, Kansas City, Los Angeles, Wichita, Portland, Minneapolis, Manito, (Illinois), and inquiries from many other sources.

THE WHITE PARASOL, BY ELIZABETH L. ROTHWELL.

PORTRAIT OF A YOUNG GIRL.

The fact that 33 artists are represented in the school collection is evidence of the stimulation given their effort when during the first two years it was hard to find many artists whose works were up to our idea of the standard to which we should adhere.

As indicating the manner in which these pictures are brought to the particular attention of the children in the schools, let me try to describe a recent function held at one of our elementary schools.

Imagine, if you will, the paintings donated to the schools beautifully and artistically hung and individually lighted on the walls of two wide balconies just above the main auditorium in the center of the building.

Imagine also an evening audience composed of children, their parents, teachers, and other friends. A few short speeches by the director of art and others, and then the surprise created by the announcement that the pictures on exhibition would be explained by boys and girls of the school. A boy or girl was assigned to and stationed just under each of the paintings, and as the various groups of friends approached, these little people, none over 14 years of age and many as young as 10, would tell each group all about the painting before them.

Their methods of description and their enthusiasm in it were most inspiring. The look on these young faces plainly demonstrated that they knew exactly what they were talking about; for what peculiar feature the picture before them had been selected and purchased by the Jury, and just what the generations who will come in contact with these pictures must learn, if they are to appreciate them.

In closing let me say: Take some of your art to the public schools. Do not house it in out-of-the-way places, requiring carfares and loss of time; open to the public only at hours inconvenient to children; often charging admission; frequently requiring children to be accompanied by older persons; and, seldom having any one in charge whose duty is to try and interest them.

GEORGIA, BY F. S. ACKERSON.
PRESENTED IN 1920.

Duties of the Printing Instructor

C. W. Hague, The Stout Institute, Menomonie, Wis.

THE position of an instructor of printing in a school carries with it definite responsibilities, or duties which, when carefully exercised and lived up to, will do much to register success both for the instructor and for the department of which he is in charge.

These duties may vary to some degree depending upon the nature of the school and the extent to which printing is emphasized as a part of the school curriculum; but, if the true purpose of the work is pursued, they will be found fundamentally the same. Where the department is large and requires the services of several instructors, these duties may be divided; none of these are eliminated but usually they are enlarged through the process of specialization. The extent to which they are carried out depends largely upon the ability and conscientiousness of the individual, and in some cases upon the amount of pressure which is brought to bear from the higher administration.

In the discussion which follows we shall assume that the man is in complete charge of his department, amply prepared to function as an able instructor. and with a willingness to work and succeed. Then, the next step is for him to be fully informed as to what will be expected of him both in the performance of teaching, and as a member of the faculty of the institution in which he is employed.

Of course the main business of any instructor is to *teach,* and to competently serve in the development of the learner. This, however, is very abstract, for the business of teaching involves many factors, or duties, other than the mere imparting of knowledge to a class of pupils. An instructor's duties do not begin when the class is called, nor cease when the class is dismissed. The successful conducting of a class is largely a result of adequate preparation and the execution of other duties. No matter how well an actor can perform upon the stage he will not make a "hit" with his audience unless the play itself is well chosen and the stage properly set. The same is true of an instructor; unless his material is well organized and carefully selected his teaching will not be effective. There are many things which an instructor must know and be able to do in order to teach, and there are also many things which he must know and do which are closely related and supplementary to teaching. In other words, in addition to teaching there are regular duties which must be performed which are as much a part of his profession as the actual conducting of a class. These supplementary duties are not commonly emphasized as a part of the teaching profession, and yet they are the key to the progress of any instructor.

The discussion of the many duties of the printing instructor can best be treated by dividing them into two groups as follows: Professional Duties, and, Duties Other Than Teaching. In this way their distinction can be shown and at the same time the close relationship between the two groups may be emphasized.

Professional Duties

By professional duties are here meant those duties which directly pertain to the systematic training and development of the pupils, or the pedagogical duties. They may be summed up under the following heads:

1. To know what he is teaching, and more.
2. To be able to skilfully do the work himself.
3. To take stock of his pupils.
4. To select material best suited to purpose and equipment.
5. To organize this material most effectively for the systematic development of the pupils.
6. To have a definite purpose for each lesson and to properly prepare each lesson before attempting to teach it.
7. To have definite means of recording the progress of the pupils.

To Know What He Is Teaching and More

The first essential of any man in any business is to know his business, and the teacher is no exception. A teacher is constantly exposing his knowledge to others, and unless he knows what he is teaching he will soon be forced to resign. In fact, he must know *more* than he is actually teaching so that he may satisfactorily respond to the many unexpected questions and problems of his pupils. He must have a factor of safety of knowledge so that he will at all times be the master of his position.

There is little or no excuse for a man attempting to teach printing unless he has a knowledge of his trade which is broad enough to at least enable him to successfully work in the industry himself. The lack of this knowledge shows the lack of training, and he is not prepared to teach others until he is properly and thoroughly trained both as a workman and a teacher. It is impossible for a man to competently teach an operation or a job unless he know every step thoroughly and can explain *why* it is done as it is. For instance, there are numerous ways in which a type form can be locked in a chase, each of which will give good results on the press. All of them are practiced, but the method which has the largest number of advantages is the best for teaching. By advantages is meant such factors as time, economy, safety, convenience, and in many cases the saving of material. A type form may be arranged in a number of ways in the chase and a satisfactory impression obtained. However, we know that if it is placed near the center with the length of the form parallel to the length of the chase we have several distinct advantages. We can obtain the best impression with the least amount of make ready, and it will be most convenient for feeding the sheets into the press. Likewise, if we place the quoins at the top and right

such that the inside quoins will slide toward the solid banks of furniture we find several additional advantages. First, it is a matter of convenience in locking the forms with the right hand, and second, the quoins cannot twist the form. This is what we mean by *knowing* what one is teaching. The instructor must be able to give to the pupils the best method of producing the job with the reasons for each operation and its advantages.

To Be Able To Skilfully Do the Work Himself

In the shop the method of instruction most commonly used is demonstration. Where there are many trade operations to be performed which are new to the learner it is almost impossible to train the student to do them by *telling* him how to do it. It is necessary for the teacher to *show* him, or demonstrate, by first doing it himself, step by step, so that the student can *see* how it is done. In order to be able to do this it is necessary for the instructor to be a skilful workman as well as to be able to talk. The old saying that *actions speak louder than words,* is very applicable in this case.

If a teacher performs his operations poorly when demonstrating to a class he cannot expect his students to be skilful. It is rare that a pupil will surpass his teacher in the things which he is being taught, so it is up to the teacher to set a pace which will keep the pupil eager to progress. The work of the instructor should at least equal that which is necessary to produce similar commercial products placed upon the market because the aim of the student is to produce salable products. The idea that poor, shoddy work is all that can be expected in the school is wrong, and, while beginners cannot be expected to produce first-class work, they should at least have first-class work shown them by their instructor as an incentive to develop.

Here again, if the teacher is not a skilful workman, it is because of the lack of training, and it is his duty to gain this skill as rapidly as possible. His shop training, whether at the trade or in the school, is deficient, and he is not prepared to teach others things which he cannot do himself. If the instructor is eager to obtain this skill he should spend his spare time in production work in some shop where he may observe the work of skilled workmen.

To Take Stock of His Students

One of the first and main duties of an instructor in charge of a printing class is to "take stock" or size up his pupils. No two classes of pupils are the same, and no two pupils within a class are exactly the same. They may differ in mental capacity, in mechanical ability, in age, and in disposition. Some may be of a serious nature and strive to learn rapidly, while others may be there as a matter of course and will absorb just such things as they cannot avoid. Every class is more or less an individual problem for the instructor and he must sympathetically study each pupil so that his method of instruction will do the most for him.

The nature of the school will have much bearing on the nature of the individuals and in some schools this stock-taking problem is much harder than others. For instance, in a public school where students take printing out of choice, the attitude as a class is usually more favorable toward the work than in schools where the pupils are required to take the work. The mental attitude on the part of the pupil does much to make the problem easier, or harder, for the instructor. The age of the pupils will also govern the method of approach on the part of the instructor, and he must understand the characteristics of the ages of the students which he is training. Much can be done to simplify this problem of differences of attitude by the "try-out" method, in which the pupils have had an opportunity to try a number of different kinds of shop work with the view of selecting the one in which they are most interested. Having selected printing as a subject in which to major, or specialize, they are then of a favorable attitude toward the work.

The problem of differences of mental capacity and mechanical ability is one which confronts every instructor, even though all are favorably inclined toward the work. Possibly no two students learn a thing at exactly the same rate and it is almost impossible to effectively teach them as a group. It is not fair to the poorer ones to go too rapidly, and it is unfair to hold back those who learn easily. In many cases those pupils who learn slowly also learn most thoroughly, and eventually make the best workmen, and they must be trained in accordance with their mental capacity. The same is true in regard to the mechanical ability of various students; some are naturally good workmen and some lack the ability to make their hands function as well as their heads. Many students can copy a job skilfully and accurately but have no originality whatsoever. The instructor must find these differences, and not only adapt his method of instruction to the individual, but he must also guide the various students in the paths in which they will make the greatest achievement.

This gives rise to another phase of stock-taking in teaching, that of *teacher guidance.* By carefully observing the progress of the pupils in the various phases of printing the instructor can foster their inclinations so that they will develop into first-class specialists. One student may make a good compositor, another a stoneman, another a pressman, and still another may do his best work as a business executive. With printing specialized as it is today we have room for all and the instructor in the school can do much to serve all branches of the printing industry.

To Select Material Best Suited for Purpose and Equipment

By material we here mean the content which is to be selected for training the learner. Opinions differ greatly as to what should be selected for teaching in the school, and possibly no two instructors will use exactly the same material. A detailed treatment of this topic would be far too lengthy for this brief space and we will discuss only those factors which govern this selection.

It is impossible for most schools to teach the printing trade, as it is today, in its entirety. It rests, there-

fore, with the instructor to select such portions of the trade as will be most suitable for the purpose of his pupils, taking into consideration of course the range of equipment, length of the course, and capacity of the students. Where time and money are no object it is often much easier to make this selection; where these are limited it is a problem to select the content which will do the most for the student in the shortest time.

In selecting material the first thing to be considered is the aim of the instruction. If it be a general course of development the work will be general, with emphasis upon the relationship to other courses and other fields of work. If it be for the purpose of teaching the entire printing trade the content must be large in scope with emphasis on practical problems for all phases of the work. If specialists are to be trained the material must be specifically selected to train the pupil in every detail of the particular occupation in which he is specializing. The instructor must bear in mind the objective of his training and select material best suited to the needs of the learners.

Equipment and length of time to be devoted to the work of the course have a vital bearing on the things which can be taught. In many cases one of these factors will hinge upon the other. For instance, if the equipment is meager, the scope of the work will be limited, and hence the length of the course will necessarily be short. Conversely, if the allowable time for the work is limited, a small equipment will be adquate. As equipment and time can be increased, the teaching content will naturally be increased, and the scope of the work will be broadened.

The capacity of the students has already been discussed, but not directly from the standpoint of selection of content. The problem here is largely that of selecting content in conformity to age and maturity of mind. Young pupils will naturally need material which is not difficult and generally broadening in nature, while mature students can master more difficult problems and are capable of working with more complex machinery. In selecting material, then, the instructor must provide content which is appropriate to the ages of his students.

To Organize the Material Most Effectively for Instruction

Having selected the proper material for instructional purposes the next step is for the instructor to organize this material for the systematic development of his pupils. A printing teacher has no more right to teach a class without first organizing his information than a carpenter has the right to start building a house without a set of working plans. The result would be about the same. The student might obtain a lot of information, but it would not be in sequential order, and he would not be able to apply it systematically in producing jobs.

The old printshop method of "devil" training is not teaching, and the boy cannot be expected to develop rapidly unless the work is given step by step in teaching order. Jobs are produced by performing definite operations, and these operations should be given in the order in which they are applied. Likewise most jobs in the print shop vary in the degree of difficulty, and those jobs which are less difficult should precede those which are more hard, in their regular order.

If the instructor has his material well organized, the student will make rapid progress and it will be easy at any time to determine what has been learned and what remains to be learned.

To Have a Definite Purpose for Each Lesson and to Properly Prepare Each Lesson Before Attempting to Teach It

Every operation in the printing trade is done for a definite purpose and this purpose must be conscious in the mind of the instructor at the time he is teaching a lesson. The purpose may be complete in itself, or it may be subsidiary to a larger or greater purpose, but without it the teaching will be aimless and many times valueless. The purpose of a lesson may also be of a broader nature than the mere teaching of a mechanical operation; it may carry with it such factors as accuracy, rapidity, skill, and the inculcation of good habits.

If the material selected for teaching has been properly organized, the purpose of each lesson taught will be evident, for it is merely the means of accomplishing a definite end. It is the medium by which the large objective is accomplished, step by step. The purpose of the work taught one day may pave the way for the purpose of the next, and so on until the objective is reached. In straight composition for example, the objective is to teach the pupils to set type. In order to do this the student must first learn his case and the many other things contingent upon this accomplishment. We must break up the main objective into a number of lessons, each of which will have a direct purpose in training the pupil to set a finished job.

This purpose is equally valuable to the teacher himself, because with it he has a tangible aim with which to prepare his lesson. An instructor who goes before his class without first preparing his subject cannot expect to present it in an effective, logical order, and he cannot expect his learners to gain systematic knowledge. A good teacher will have a definite purpose for each lesson he teaches and will have it prepared such that the students will see the value of its presentation both as a unit and in its relationship to what has been taught before and what may follow.

To Have a Definite Means of Recording the Progress of the Pupils

Whenever a student learns a trade or a profession, he passes through a series of stages of development which will eventually qualify him as a finished workman. These stages of development may be sequential operations, or, they may be in the form of progressive technical information. At any rate the learner is, or should be, progressing, and it is the duty of the instructor to have some definite means of recording this development. The methods of recording the progress cannot be discussed here because they will vary depending upon the

nature of the work and at the particular point of observation. We may have numerous kinds of progress. We may have progress in knowledge of subject matter, and we may have progress in skill, accuracy, speed, or general mechanical ability. The issue here is to emphasize the necessity of being able to at any time determine where the learner stands in his course of development. Unless the pupil knows thoroughly what he has learned and can apply it in all jobs where it is involved, and unless the instructor is sure that the pupil knows and can apply it, he is not ready to proceed to new work.

The matter of systematically recording the progress of a printing student again resolves itself to the proper organization of teaching content, where each step or operation marks an advance toward the complete trade or occupation. The instructor will then know what has been learned, what remains to be learned, and just where the student stands at any time in his course of training.

Duties Other Than Teaching

As in every other phase of livelihood the efficient means of executing the main duties is made possible only by the proper manipulation of many subsidiary duties. This is true in the case of a printing instructor, and we are ready to discuss these duties under the following heads:

1. To keep continually informed of current trade and educational developments and to incorporate them so far as is practical in the teaching curriculum.
2. To intelligently select and purchase equipment and supplies for the shop.
3. To arrange or lay-out the shop so that it will be best suited for work, considering such elements as light, convenience, safety and hygiene.
4. To be responsible for and care for all equipment and supplies.
5. To keep a cost record of supplies and production.
6. To take active interest in all school activities in the community in which he is serving.

To Keep Informed of Current Trade and Educational Developments

One of the first and main duties of any instructor teaching printing in the school is to keep continually abreast with all modern industrial and educational developments. Printing, while not as new as many of our large industries, is going through a continual evolution, and the present generation cannot afford to spend their time upon trade knowledge and practice which has been discarded. Hand operations have given way to machines, machines have been improved, and a trade has been divided into occupations which give rise to a specialized industry. Every day brings with it new methods of operation and production and the school must accept and apply them if it is to be of real service to the industry and the learner.

What is true in the industry is also true in the teaching profession and the instructor must keep informed of the current developments in his profession. Printing, especially, is new in the school curriculum, and it is growing and changing very rapidly. We are still in the experimental stage of shop instruction and the methods which we use today will probably be replaced by better and more efficient methods in the future.

No shop instructor can afford to take for granted that he knows enough to teach his subject and to conceive the idea that the old ways are good enough. It is his duty to keep in touch with all phases of his work by reading current publications and by coming in direct contact with the industry itself.

To Intelligently Select and Purchase Equipment and Supplies

With the job of teaching in the school print shop is also linked the problem of its being properly equipped. This gives rise to another important duty of the instructor, that of selecting and purchasing the equipment. While this problem has been greatly simplified through the cooperation of the dealers in printing equipment and supplies, the final choice should rest with the man in charge of the department. As a rule the equipment in the school cannot be as elaborate as that in a commercial shop where it is producing large pecuniary returns; it must be selected to give the greatest instructional value at a moderate cost. It is surprising what a large amount can be taught in the school even with a meager equipment, if the equipment is well selected and properly used.

The instructor must also have a thorough knowledge of supplies, such as paper and inks, if the selection is to be appropriate and the purchase economical. Good results cannot be obtained unless the materials with which the students work are well selected. It rests, then, with the instructor to assist his instruction with equipment and supplies best suited to the purpose of his work.

The Arrangement or Lay-Out of the Shop

Where the print shop is located in a building which has been constructed with a view to its accommodation, the problem of arrangement or lay-out is usually previously solved, but where the department must adapt itself to old quarters not specifically intended for its purpose there are many problems. It is the instructor's business to so arrange the equipment that the pupils will derive the maximum benefit of its use with the minimum amount of peril to themselves. This includes such factors as proper and adequate light and ventilation; safety first must always be an outstanding feature of consideration. While the pupils may be instructed in the matter of carefulness they must be safeguarded by every possible precaution.

The matter of convenience is also an important factor in the arrangement of tools and equipment. The aim should be to eliminate all unnecessary steps and delays so that time will not be wasted. Have a place for everything and train the pupils to form the habit of returning things to their proper places.

To Be Responsible For and Care For Equipment and Supplies

Along with the responsibility of selecting and arranging the equipment, comes the responsibility of its care and maintenance. Students cannot do satisfactory work if the materials and equipment are not kept in good working order. It is true that the equipment in a school shop may have harder treatment than that in a commercial shop owing to the fact that the learners are not skilled in its manipulation, but this can be largely controlled by the instructor. It should be a part of the instructor's duty to train pupils to properly use and respect the tools with which they work.

A large part of the care of tools and equipment must be attended to by the instructor personally and he should not hesitate to spend such additional time as is necessary to keep everything in good repair and continually ready for use.

To Keep a Cost Record of Supplies and Production

Inasmuch as the teaching of printing is directly related to industry which is operated on a commercial basis, there should exist some form of cost accounts in the school. It is not necessary, nor often desirable, to consider such things as overhead and maintenance, because these can be charged to instruction, but it is well at all times to keep accurate account of production costs. Many shops show a material saving on the school printing bills. While this should never be the first aim of the department, it is often a strong talking point in the procuring of new equipment and supplies, and may incidentally have some bearing upon the instructor's salary.

It is well also from the standpoint of the students to teach them the value of the materials they are using so that they will work economically. They should be taught the value of finished products as well so that they may later intelligently sell or purchase these products.

The usual objection to cost-keeping on the part of the instructor is the amount of bookkeeping which it involves. Some simple method such as a job envelope may be satisfactorily employed which will be sufficient.

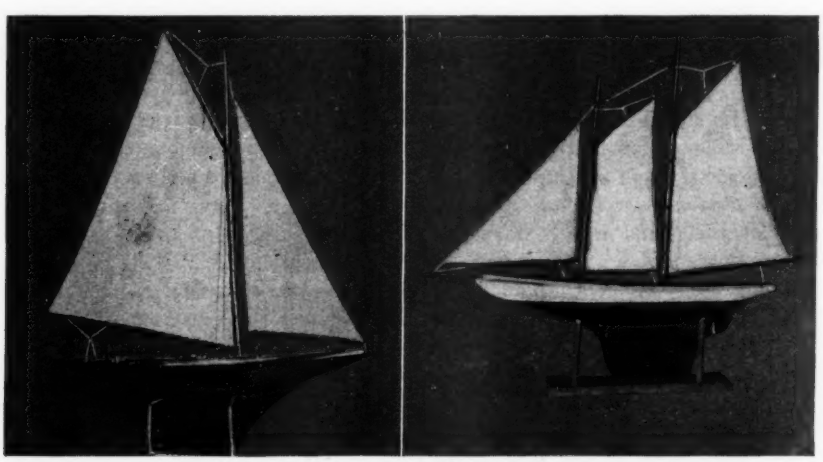
To Take Active Interest In All School Activities

When a man is employed as a teacher in a school it is usually with the understanding that he will take active interest in the general welfare of the school as a whole as well as in his particular department. Much of a student's development takes place outside the classroom in such activities as forensics, singing, publication work, athletics, and many forms of recreation, and someone must guide them and supervise these activities. The teacher may not be able to take active part in all of these activities but usually he can give aid in one or more of them, and he should at least give his moral support to the others.

The printing department, through the medium of publicity, is in a position to aid more forms of activity than possibly any other department. Much can be done through the school publication, if one exists, to further such interests, and the printing of posters and tickets is of benefit to both the printing students and the events which they represent.

We may go further than the school in this duty of active interest and include the community in which the school is located. While nothing is usually included which involves this in a teaching agreement it is expected that the teacher will be an asset to the community in which he is serving. He should at least be a reputable citizen, one whose influence will have a favorable reaction upon the minds of the pupils and people in general.

What a man *does* as a teacher will directly reflect upon his department and himself. If he is a *pusher,* his work will grow and he will grow. If he is a *slider,* his students will lack interest in him and the work which he is teaching, and he will probably never rise above the position which he now holds. In the interest of printing in the schools we, as instructors, should endeavor to do our part to make it foremost in the shop curriculum both as a manual and a cultural subject.



MODEL YACHTS MADE BY MR. EDWIN R. KING, MANUAL TRAINING INSTRUCTOR, NEW BEDFORD, MASS.

Industrial Arts Sketching— Part III[1]

ELEMENTS OF SIZE SPECIFICATION

Carl L. Svensen.

THE use of the graphic language in the industrial arts requires more than the description of shape. The specification of size is of equal importance. The faculty of thinking in space—three dimensional thinking—includes the idea of *size* as well as *shape*. While a large amount of time and great emphasis have been given to the theory of orthographic projection and shape description generally, too little attention has been given to the development of *size thought* and proportion.

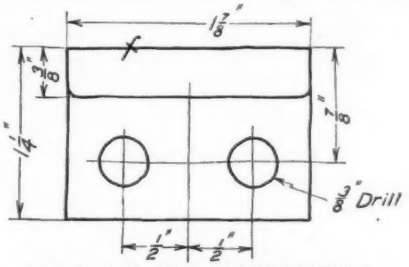


FIG. 1. NOTATION OF DIMENSIONING.

A thorough grounding in the elements of dimensioning or size specification is an important division of the study of the graphic language. General rules and statements are of little value without a working knowledge of the definite fundamental principles.

Shop experience, judgment, etc., have the same value in *applying* the theory of size specification that they do in *applying* the theory of shape description but are no more necessary in the one case than in the other for an adequate presentation of the theoretical principles.

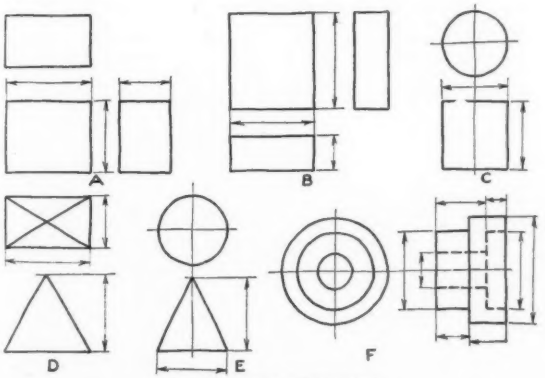


FIG. 2. SIZE DIMENSIONS.

Considerations of time and other difficulties make it impracticable to obtain dimensions by measuring scale drawings. When the views are sketched freehand this becomes a matter of even greater difficulty. Lines and figures to specify sizes, and notes to give additional information to form the *notation* of dimensioning, as illustrated in Fig. 1. The figures and arrows must always be clearly made with a sharp pencil. Extension

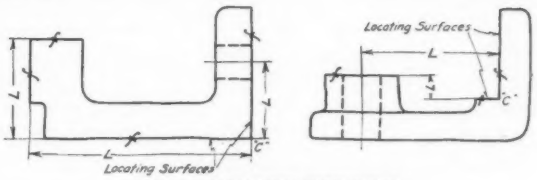


FIG. 3. LOCATING SURFACES.

or witness lines to extend lines of the views, and dimension lines to show the extent of a dimension are made very light gray lines. In this way the sketch will have contrast and be easy to read. "Finished" or machined surfaces are marked with a symbol "*f*". Observe that

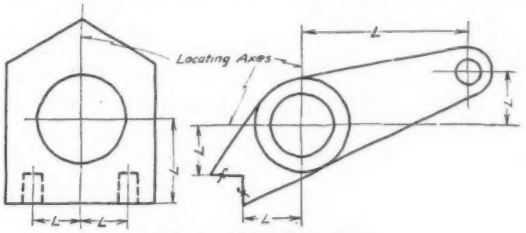


FIG. 4. LOCATING AXES.

figures and notes are placed so as to read from the lower or right-hand edges of the sheet.

The views or shape description should be completed before starting the size specification. Then put on *all* extension and dimension lines but *do not* put on any

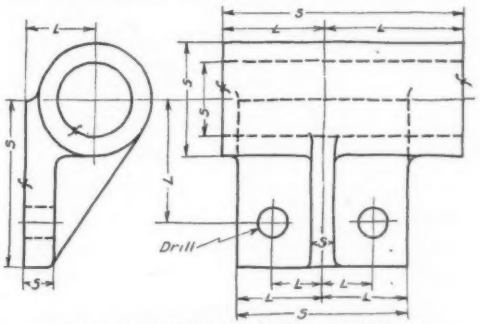


FIG. 5. SIZE AND LOCATION DIMENSIONS.

figures until certain that *all* dimension lines have been located.

The placing and choice of dimensions involves a knowledge of the few simple and definite principles which follow. This will result in a well and completely dimensioned sketch without guesswork or confusion.

All constructions can be thought of as made up of prisms, cylinders, etc., or parts of such solids, either

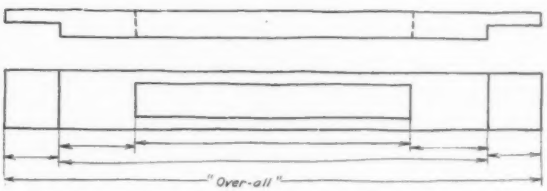


FIG. 6. "OVER-ALL" DIMENSION.

[1]Copyright 1924 by Carl Lars Svensen. All rights reserved.

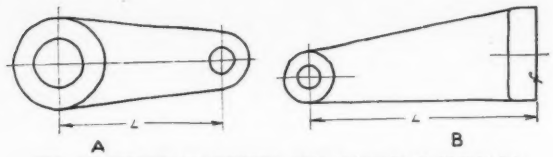


FIG. 7. CENTER-TO-CENTER AND CENTER-TO-SURFACE DIMENSIONS.

positive or negative. The sizes of each part can be given and its position fixed by location dimensions. Thus, there are *size dimensions* and *location dimensions.*

Several cases of size dimensioning are shown in Fig. 2. A rectangular prism, a plate or similar piece requires three dimensions. A cylinder requires two

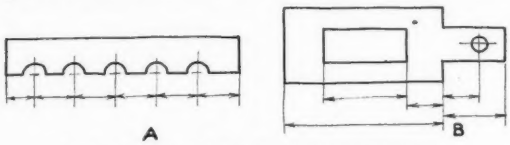


FIG. 8. CHAIN AND OFFSET DIMENSIONS.

dimensions, diameter and length. A rectangular pyramid requires three dimensions and a circular cone two dimensions. Note the positions of the dimension lines. These should be the same whenever the same conditions are present. For a prism two of the dimensions should read in line as at either *A* or *B* of Fig. 2.

Some *location* dimensions are shown in Figs. 3 and 4. Prism type and similar parts are located by surfaces while cylindrical parts are located by axes and surfaces.

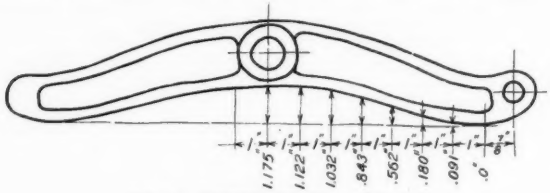


FIG. 9. DIMENSIONING A CURVE.

Both size and location dimensions are applied to the piece, illustrated in Fig. 5. The letter *S* denotes a size dimension and the letter *L* a location dimension. By dimensioning each part in order and then locating them, the work of size specification can be carried to completion definitely and without confusion or doubt.

The question of where to start from in locating the elementary parts can be answered by a reference to Figs. 3 and 4. There are well defined *locating surfaces* and *locating axes* having more or less importance depending upon the construction or part. Contact surfaces, that is, surfaces of a part which are to be placed in contact

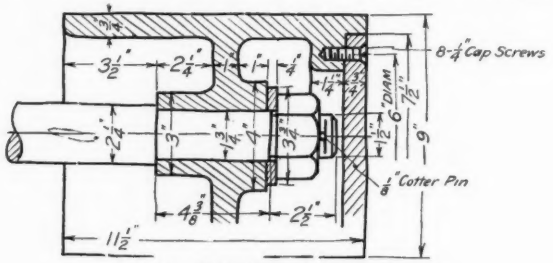


FIG. 10. INCOMPLETE VIEW SKETCH.

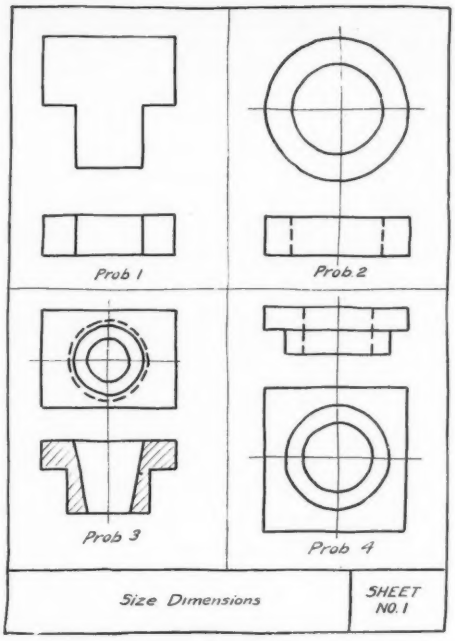


FIG. 12.

with or against another part, are locating surfaces. In Fig. 3, the locating is all fixed by the two surfaces which meet at the corner *C*. Such an important starting position may be formed by two axes as in Fig. 4 or by an axis and a surface. The center lines or axes of parts which come together should be used as locating axes for such pieces. Uniformity of treatment for similar parts soon does away with uncertainty.

Once the location axes and surfaces are identified the location dimensions for the various parts can be supplied.

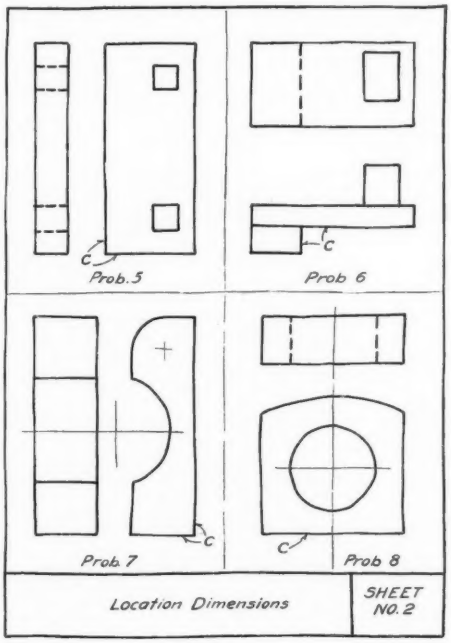


FIG. 13.

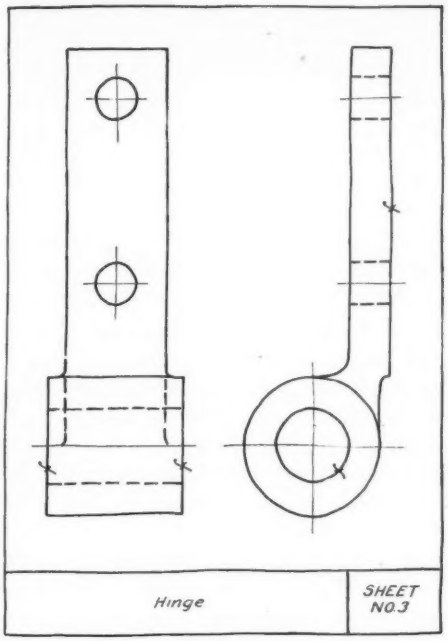


FIG. 14.

Sometimes but *NOT* always an *"over-all"* dimension is necessary for checking or other purposes. These may be partial or complete. In general, over-all dimensions are used on "square-end" pieces, for finding the amount of stock, etc., and for assembled parts. An "over-all" dimension is indicated on Fig. 6.

Center-to-center or *center-to-surface* dimensions form a very important group of location dimensions. They are used on "round-end" pieces, and for locating holes, notches, and repeated details. Compare the examples given in Fig. 7 with that of Fig. 6. Note that over-all dimensions should *NOT* be used under the conditions illustrated in Fig. 7.

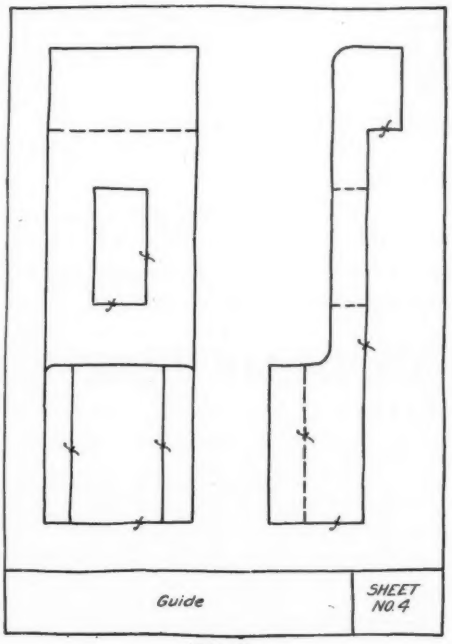


FIG. 15.

There are two general arrangements of dimensions in series, *chain* and *off-set*, Fig. 8. The *chain* arrangement may be used for a series of equal or like dimensions but for all others the *off-set* arrangement is very much better for sketches. The off-set at once fixes the distance which is to be indicated by the dimension and does this before the arrows are put on.

Radii for arcs of circles can be given on a radial line. Diameters should be given in preference to radii where the part can be dimensioned as a complete cylinder. Irregular curves can be dimensioned on a series of equally spaced dimension lines as in Fig. 9.

There are a few details which, if given attention, will assist in the placing and reading of dimensions.

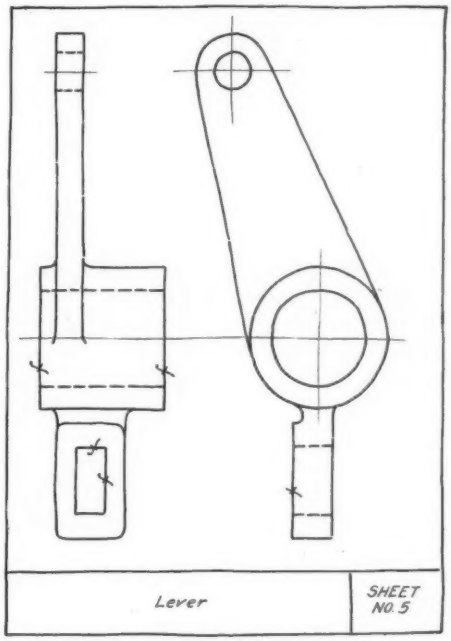


FIG. 16.

These suggestions should not be confused with the elements of size specification. They are not rules, but serve as a guide to good practice.

Place dimensions outside of views rather than inside, especially on sectional views or where there is much detail.

It is seldom necessary to repeat a dimension. Sometimes when views are sketched on separate sheets a few dimensions may be useful in fixing their relation.

Keep dimensions clear of lines of views.

Place larger dimensions outside of smaller ones.

The center line or lines of the views must not be used for dimension lines.

Try to avoid crossing dimension lines.

Where there is considerable detail on part of a sketch it may be necessary to repeat that part in a larger sketch so that the dimensions can be shown without crowding.

Drilling is best located in the view where it shows

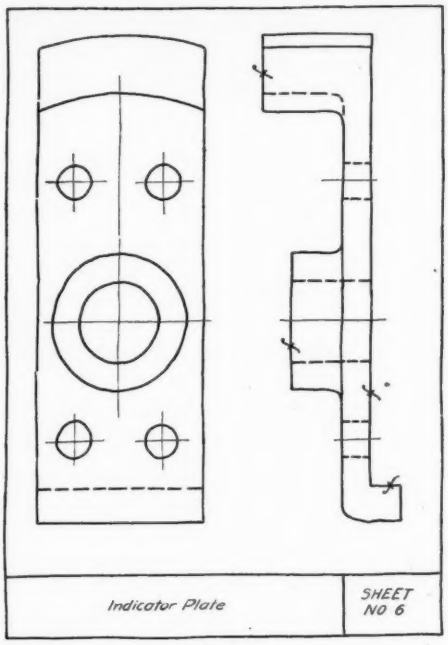


FIG. 17.

in the plan. Diameter of holes, drilling, threading, etc., can be given in a note.

Sometimes a partial one-view sketch can be used to tell the shape and size as in Fig. 10.

An assembly sketch is dimensioned in exactly the same manner as a single piece. Consider each piece separately until all have been specified. Do not confuse the whole construction with the parts of which it is composed.

The application of the principles of size specification requires consideration of the following steps:

First, analyze the construction into its elementary parts—prisms, cylinders, etc.

Second, identify or fix the locating axes and surfaces.

Third, place the size dimensions on each of the elementary parts.

Fourth, put on the location dimensions to fix the position of each part.

Fifth, put on such "over-all," "center-to-center" or special dimensions as may be necessary.

Sixth, put on notes to tell material, methods of working, accuracy, quantities, or other necessary information. Add date, title, and initials or name of the one who made the sketch.

It is just as necessary to visualize a piece when it is being dimensioned as it is when the views are being sketched. The sizes are being given and the various parts are being located so think of the actual piece or construction. It is not the views which are being dimensioned but the actual piece and therefore the actual distances should be constantly in mind. This requires the consideration of more than one view at a time. Learn to visualize *size* as well as *shape.*

Dimensioning Exercises

The exercises suggested for dimensioning practice may be conveniently sketched on 8½"x11" plain paper either white or cream. A border line and title space are desirable and may be drawn with instruments or freehand, Fig. 11. If freehand, estimate the distances which are indicated on the layout.

The proportions of the sketches may be judged from the layouts given, as each sheet represents a 7 by 9 inch working space. Each sketch should be carefully "blocked in" and finished as explained in the preceding articles of this series, following the steps given for applying the principles of size specification.

Actual dimensions can be estimated and supplied but for study purposes it is better to use the letters *S* and *L* indicating *size* and *location.*

Sheet 1, Fig. 12, Probs. 1, 2, 3, and 4. Divide the working space into four parts and copy the views as given. Analyze the pieces shown, into elementary parts and give the size dimensions for each part. Number the dimensions consecutively, as each problem is put on.

Sheet 2, Fig. 13, Probs. 5, 6, 7, and 8. Sketch the views as given. Locating surfaces are indicated by the letter *C.* Put on all *location dimensions* but *no size dimensions.* Use letter *L* to represent the dimensions.

Sheet 3, Fig. 14, Prob. 9. Sketch the views of the HINGE. Add complete dimensions, using *S* and *L* to represent size and location dimensions.

Sheet 4, Fig. 15, Prob. 10. Sketch and dimension the GUIDE.

Sheet 5, Fig. 16, Prob. 11. Sketch and dimension the LEVER.

Sheet 6, Fig. 17, Prob. 12. Sketch and dimension the INDICATOR PLATE.

The Dalton Plan in the Manhattan Trade School for Girls[1]

Carolyn Stern, Teacher of English.

IN teaching the academic or non-vocational subjects, the Manhattan Trade School for Girls has been confronted with a real problem, which will doubtless have to be met by all vocational or trade schools. Is it possible to correlate the academic and the trade work so closely that the pupils will be convinced of their relation? Will the teacher be able to arouse in the pupils, whose interests probably lie along manual and trade lines, a real desire to do the book work prescribed? Or, will they feel that the work in the vocational school is merely a continuation of the elementary school curriculum—more "studies" which succeed in keeping

[1]Manhattan Trade School for Girls, 127 East 22nd Street, New York, N. Y.

them away from their trade classes and consume valuable time?

The teachers of the Manhattan Trade School believe that this problem has been solved in the discovery of the Dalton Plan of Education, as developed by Miss Helen Parkhurst. The school has been operating on the Dalton plan for nearly two years, and they feel that they are now in a position to speak from experience upon its "workability."

The Dalton plan has been so widely discussed of late that it is unnecessary to outline its principles but a word or two as to how it has been carried on in the Manhattan Trade School may help other teachers and schools to understand some of its significant points.

To begin with, as the result of careful planning and questioning on the part of the teacher, it provides individual instruction for the pupil. Assuming that 45 minutes per day were devoted to a given subject, the teachers of the Manhattan Trade School decided first what work the average pupil could accomplish in periods of five weeks, and planned accordingly. Written directions, questions and suggestions for carrying out this work—regular contract assignment sheets—were mimeographed and posted where the pupils had access to them. These assignment sheets are now printed in loose-leaf, pamphlet form to be used by each pupil. Each academic class has been turned into a "subject laboratory" which the pupils enter when they do the work of the laboratory. When a pupil is ready to recite she writes her name on the blackboard, going on with the next problem until she is called upon and thus wasting no time. The teacher calls to her desk a pupil, or groups of pupils who have finished the same work, discusses it with them, makes corrections or gets the pupils to make them, and records their progress on a class graph. The pupil marks her individual graph. When the pupils come to a point in their work where they will be benefited by a group discussion or instruction, a notice calling a group conference is posted on the bulletin board. It is the pupil's duty to consult this bulletin board daily and to hold herself responsible to attend conferences for which she is ready.

The teachers of the Manhattan Trade School feel that the actual information which pupils gain by this method of study is only one of its many merits. The one great drawback of classroom instruction is now done away with: the bright child is no longer bored by the pace which she must maintain to accommodate her slower sisters, nor is the slow child breathless and bewildered by the rapid pace she must assume flying helter-skelter over half-comprehended and undigested points. Each individual can set her own pace, doing all her own work as thoroughly as it is possible for her to do it. No longer is the slower, timid pupil allowed to sit back and merely listen, forming an audience for her bolder or quicker classmates. She works out each problem, taking her time to be sure, but covering the ground and understanding her work as she goes.

Another inestimable advantage to pupils who are looking forward to taking their places in industry is the experience gained in planning their own work and budgeting their own time. The Manhattan Trade School gives one-half of the school day (three hours) to shop work, while the other half (three hours) is given to related mathematics, English, and other general subjects. The three hours devoted to trade work had always been carefully budgeted by the pupils, as promotion was the result of individual trade work. But the varying rates of speed in trade work made impossible the adaptation of the related subject to the abilities of the individual pupil. Now it is "up to" the pupil so to plan and budget the time given to her non-vocational subjects as to accomplish the greatest amount of work in the shortest time. And it is remarkable what girls of 14 and 15 can do in this respect.

It has been found, too, that the quality of the oral work, as well as the appearance and neatness of the written work, have so greatly improved that it is almost impossible to believe that the same type of girl is still being taught. When the teacher has it in her power to reject poor work and to withhold a mark until better work is handed in, the quality of the work will soon improve. The recording graph—literally a recording angel—is a powerful weapon in the hands of the teacher.

But by no means the least of the advantages gained by the pupil is the ability to carry out instructions. The girl who thoughtfully reads her assignment sheet, decides what is given and what is wanted, and proceeds to do what she is told in the way she is told, has acquired something fully as important to the worker in the trade as industrial dexterity.

The Manhattan Trade School has published English assignments[2] which it hopes may prove useful in other schools. They are printed in loose-leaf form so that they may be frequently revised and kept up-to-date as changes in the trade necessitate. Assignment sheets in arithmetic and textiles are now completed.

To sum up: The teachers of the Manhattan Trade School unite in feeling that for their school the Dalton plan has proved an inspiration:

It allows teachers while handling large groups to know the work of the individual pupil.

It allows each pupil to set the pace necessary for doing her best work.

It raises the standard of both written and oral work.

It puts the responsibility for doing the work on the shoulders of the pupils, making each pupil do each piece of work honestly and thoroughly.

It brings out in the pupil the ability to plan her work and budget her time.

It motivates the work in the mind of the pupil by providing that close correlation between trade and academic work which is impossible in classwork.

It develops in the pupil that all-important attribute

[2]By John Barnes Pratt, c/o A. S. Barnes & Co., 118 East 25th Street, New York, N. Y.

for the successful trade worker—the ability to carry out instructions.

TYPICAL LESSON SHEETS
Seventh Contract Assignment
1st Week

Problem I. Spelling List 12, second fifty words. Credit 1.

Problem II. Read "A French Tar Baby" by Joel Chandler Harris. This story belongs to the class known as folk lore. You have learned some folk dances in the gymnasium and in assembly you have sung folk songs. Someone has said that these things are like the wild flowers. They are not the result of cultivation, but are the simple expression of the thoughts and pleasures of simple people.

Joel Chandler Harris was especially interested in the stories that have come from the native Africans who were first brought to this country as slaves. Most of these stories are full of delightful humor.

English Assignments

Seventh Contract **First Week (Continued)**

1. Why was Brother Goat proud? What was his greatest pleasure?
2. Explain how Brother Rabbit got the better of Brother Goat in the end.
3. Change each of the following expressions by using synonyms for the underlined words:

   Tired of his miserable existence (p. 29)
   An abundance of good eating (p. 29)
   He could see her reflection in the water (p. 32)
   The result was beyond his expectations (p. 33)

Credits 2 and 3

Problem III. Exercise 11—Faulty Expressions.

(a) Study Exercise 11 carefully in order to find out why each expression in the list is wrong.
(b) Write correctly the sentences at the end of the exercise.

Credits 4 and 5.

2nd Week

Problem I. Were you ever ashamed to have your hands seen? If you understand how to take care of them, you need never be ashamed.

Write two paragraphs explaining to another girl how to keep her hands in good condition. This outline may help you:

Care of the Hands

How to wash—Temperature of water—Kinds of soap—Use of brush—Careful drying.

Care of nails—Cleaning—What is best to use?—Why is sharp steel harmful?—Cutting and filing—Shape and length—Polishing—Use of powder—Use of buffer. Credits 1 and 2.

Problem II. Exercise 12—Pronunciation. These words are very often mispronounced. Look up in your dictionary every word in Lesson 1. When you are sure of the pronunciation of each word, come to me. Credit 3.

Problem III. Current Events. Be prepared to answer questions on any topic on either page 1 or page 4 of this week's Current Events. Credits 4 and 5.

3rd Week

Problem I. Spelling. All the words in the following list are words of two syllables. They end in a consonant preceded by a vowel. If these words are accented on the last syllable, they double the consonant before adding *ed* or *ing*. If they are accented on the first syllable, they merely add *ed* and *ing*.

(a) Write all the words accented on the last syllable.
(b) Add *ed* and *ing* to the following words:

happen	differ	refer	repel
occur	transfer	defer	listen
commit	admit	scallop	omit
cover	model	excel	remit
open	prefer	compel	permit

Credit 1.

English Assignments

Seventh Contract **Third Week (Continued)**

Problem II. Read "Christmas Night with Satan", by John Fox, Jr. This dog story differs in many ways from "Gulliver". Which do you like better? Why?

1. What kind of story do you expect after reading the title? Is the title well chosen?
2. Tell three things about Satan that remind one of an innocent, pleasant little child.
3. Why did the yellow cur wish the dogs to follow him?
4. What nearly happened to Satan on Christmas Eve? What prevented this?
5. Look up the meaning of the following words: calamity, p. 58; cur, p. 59; fangs, p. 60; turmoil, p. 62. Credits 2 and 3.

Problem III. Words that are sometimes confused

(a) Be sure that you can explain the meaning of every word in the following list. Use your dictionary.
commend, condemn; estimate, esteem; pillar, pillow; pneumonia, ammonia; whether, weather; custom, costume; conservation, conversation.
(b) Write a sentence using each of the above words.
(c) Be prepared to read Exercise 13, filling in the blanks.

Credits 4 and 5.

4th Week

For the last problem of this week, you will be asked to reproduce orally a topic which you have read in the newspaper. You will be expected to give at least 8 sentences on this topic. Be sure the topic interests you. This notice is given to you so that you can take plenty of time to prepare the topic well.

Problem I. Write a letter to a friend telling how Manhattan Trade School girls spend the noon hour. Be sure to tell her something about each of the activities. Credits 1 and 2.

Problem II. Study Spelling List 13, first fifty words. Credit 3.

Problem III. Discuss with me the newspaper topic you have prepared at home. Credits 4 and 5.

5th Week

Problem I. In today's paper you have seen an advertisement for a worker in your trade. Write a letter applying for this position. Be sure to mention the name of the newspaper in which this advertisement appears. Give all necessary information including training, experience, and references, in a clear, direct manner. Credits 1 and 2.

Problem II. Study Spelling List 13, second fifty words. Credit 3.

Problem III.

(a) Write ten original sentences using the past tense of each of the following verbs: see, do, come, weave, drink, lie, lay, sing, ask, eat.

English Assignments

Seventh Contract **Fifth Week (Continued)**

(b) Write ten other sentences using each of these verbs with the auxiliary verb *has* or *have* (present perfect tense).

Credits 4 and 5.

Dynamic Symmetry in Design

R. Kimball, Beverly, Mass.

LAST fall I had the privilege of studying Mr. Hambridge's theory of Dynamic Symmetry and the work was so interesting and helpful that I am sure others would be glad to try it. I am making no attempt to cover the whole subject in this article but merely to suggest some of its simplest uses.

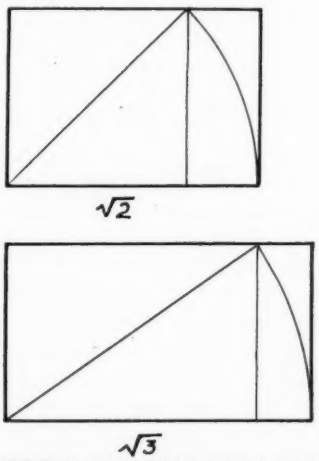


FIG. 1. "ROOT TWO" AND "ROOT THREE" RECTANGLES.

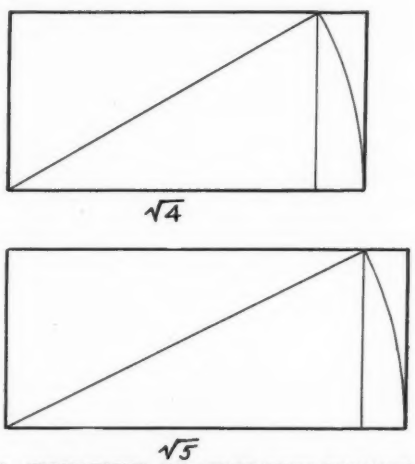


FIG. 2. "ROOT FOUR" AND "FOOT FIVE" RECTANGLES.

The rectangle of Dynamic Symmetry is based on the square, its diagonal, and the diagonal of its half. To begin with the diagonal of the square, if we use it as the length of a rectangle whose width is a side of the square, we have a proportion of $1:\sqrt{2}$. This rectangle is called a "root two" rectangle. The diagonal of this rectangle gives one whose length is "root three." The

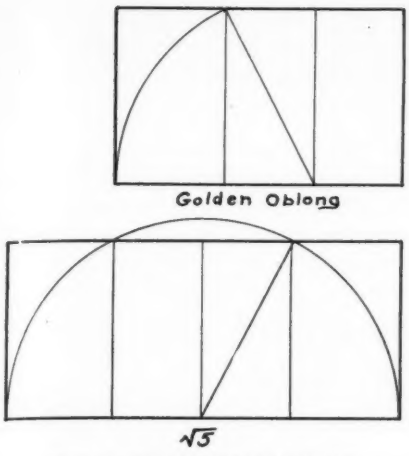


FIG. 3. THE GOLDEN OBLONG AND A "ROOT FIVE" RECTANGLE.

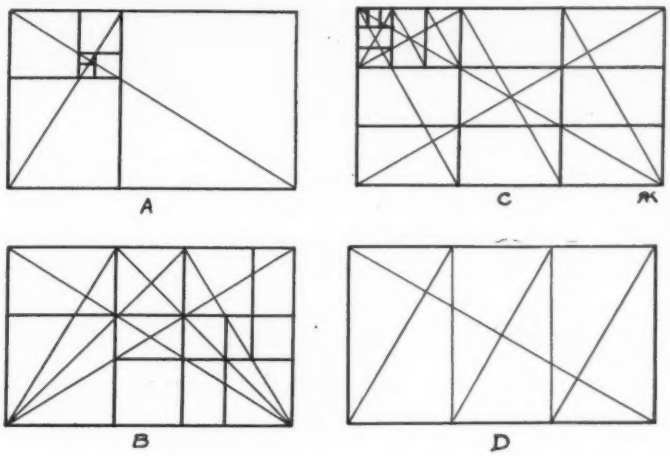


FIG. 4. ANALYSIS OF RECTANGLES.

diagonal of the "root three" gives the length of the "root four," which is equal to two squares and therefore the least interesting of the lot, and the diagonal of the "root four" gives the length of the "root five" which is the most interesting.

Using the diagonal of half the square, a rectangle called a golden oblong, or whirling square rectangle, may be drawn, and by swinging the arc to both sides of the square a "root five" rectangle is obtained showing that the two are very closely related. The majority of the Greek work was based on these two rectangles and combinations of them.

In any rectangle, if a diagonal is drawn and a line from one corner, perpendicular to this diagonal, is extended to meet the opposite side, it will cut off what is called a reciprocal of the rectangle, that is a rectangle whose proportions are exactly like the original.

In figure A this construction has been applied to a golden oblong, continued reciprocals having been cut off about the "eye" of the rectangle, or the intersection of the diagonal and its perpendicular. You will notice that in the golden oblong the reciprocal always leaves a square, hence the name "whirling square rectangle." The reciprocals of the root rectangles are equal in the root two, to one-half of the whole shape; in the root three, to one-third, etc. (see D for root three).

In using these rectangles in design or composition, a net of lines is drawn cutting them into related subdivi-

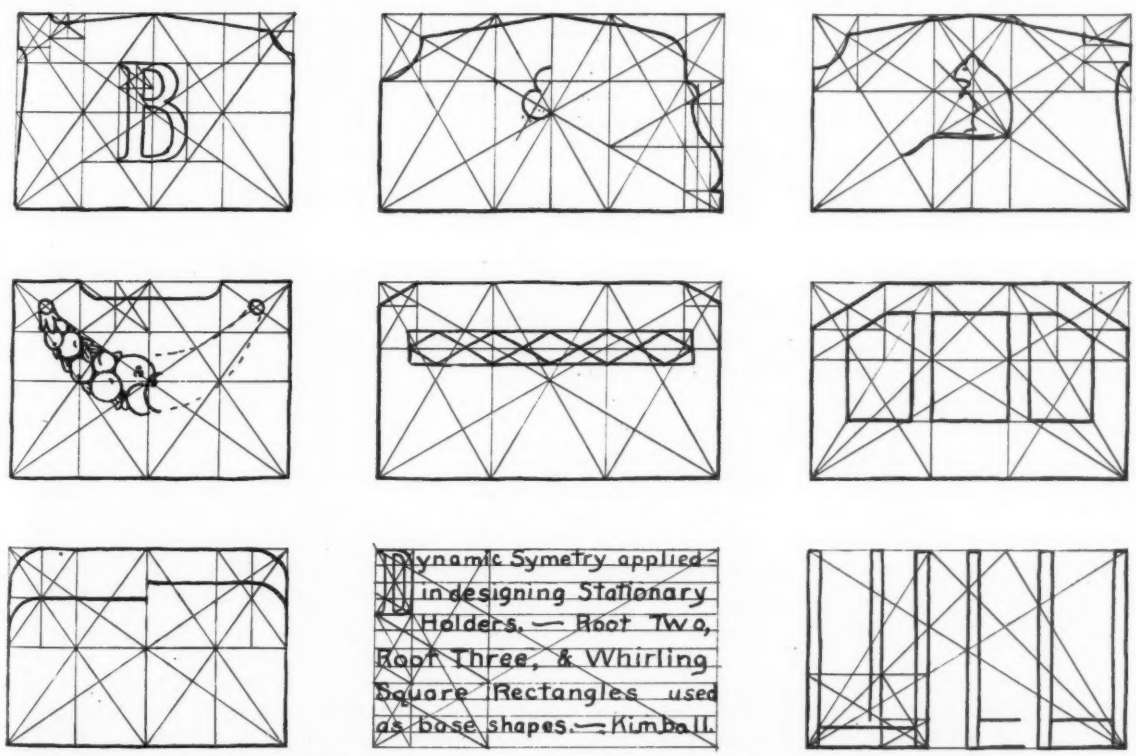

Dynamic Symetry applied in designing Stationary Holders. — Root Two, Root Three, & Whirling Square Rectangles used as base shapes. — Kimball.

FIG. 5. THE PRINCIPLES OF DYNAMIC SYMMETRY APPLIED TO THE DESIGN OF BOOK ENDS.

sions, and the various lines and areas are used to determine relative sizes and positions of various elements. In B a golden oblong has been cut up by drawing, first, the two 45° lines, cutting off a square from each end and leaving a reciprocal at either end, next the diagonals of the whole shape were drawn, then the diagonals of the reciprocals. The horizontal and vertical lines show a few of the various squares and golden oblongs which may be obtained. In C a "root three" has been cut into thirds by reciprocals, and the reciprocals subdivided by the same method. The plate of stationary holders shows these methods developed and applied. They may seem complicated at first glance, but a little work with drawing board and T square will show how simple they really are.

This principle does not take the place of any other, but forms a foundation of harmonious shapes and fine proportions on which to build with all the knowledge of design and all the good taste one possesses.

Vocational and Educational Guidance in the Junior High School Industrial Arts

Floyd D. Butler, Supervisor of Industrial Arts, Canadaigua, N. Y.

SOME of the aims of vocational and educational guidance in Junior High School Industrial Arts are the directing of the adolescent boy, industrially, by means of accurate measurement of his ability, aptitudes and attainment and to hold in abeyance hasty and unwise choice of occupations; to assist the pupil to discover, for himself, his own peculiar capabilities; and to insure to each pupil the equality of opportunity provided in the schools by a proper adjustment to meet individual needs.

After the student has discovered his individual capabilities, his strong points as well as his weak ones, he must then be given intelligent guidance and direction that his capacities may be developed fully.

At the outset, let us assume that all seventh grade pupils entering the junior high school are classified into groups on the basis of ratings of the standardized intelligence and achievement tests. In addition, the ratings of their former teachers should also be considered in making the classifications. This grouping makes special provision for bright and dull alike and offers to all pupils a wider opportunity than would be possible were they kept together in the same class. It develops qualities of leadership and creates a feeling of pride in accomplishment in a way that would never have been possible where the bright and vigorous pupil was grouped with the slow and backward boy.

All boys in the seventh grade should be given a semester's work in the general or composite shop. The work of this shop should be so arranged that boys could have a five weeks' course in at least four of the six or more kinds of shop work offered in the school in order that the boy and the shop instructor shall have an opportunity to discover any particular aptitudes for one or another types of work.

Following the seventh year the pupil should have the opportunity of selecting the course which he wishes to pursue. Careful preparation, however, should be made to see that the wisest possible choice is attained. After it is made and the pupil has been given a try-out he should still be given the privilege of changing his course at the end of the first or second semester; provided it is evident that by such a change he will be given a better chance to succeed.

There is considerable to be said in favor of a "rotation of shops" plan which would assign the boy who selects this plan to ten weeks' instruction in each shop. At the end of the first ten weeks he would be transferred to another shop, and so on, during the two or four semesters of his course. This rotation plan usually gives a more intense try-out in each type of work than the general shop. He also gives ten weeks instead of five to each type of work and he receives instruction in a shop where only one kind of work is taught.

Guidance may be given through frequent conferences between the industrial-arts teacher and his class. One period each morning can be used for such activities as clubs, nature study, science, radio, aviation, boy scouts etc., and for each of these a regular assignment of place and day. At least one day a week may profitably be given the industrial-arts teacher to study home conditions, and environments, to learn about vocational plans and aspirations from the home. In this way the instructor will, if tactful, learn more about the individual pupils than from any other method. He should through personal conference and through class instruction acquaint the pupil with the facts concerning the advantages and disadvantages, the permanency of employment, salary opportunities, labor organization, and mental and physical requirements of certain lines of work. Vocational Guidance so conducted will help a pupil on leaving school not only to fit into his particular niche, but he should incidentally derive from it conscious, purposeful self-direction.

Many teachers who struggled through school and college amidst the greatest difficulties, chiefly financial, realize how very few of the children entering school will ever get into the colleges and universities. To them the college is often made to seem to be the chief aim of all school life, and, as Dr. Davenport suggests, these teachers are trying with more or less success to make a trunk line railroad out of the school system in order to railroad all students into college. As a matter of fact, 98 per cent of the pupils fall by the wayside like chunks

of coal from a train. It is largely a matter of chance what finally becomes of them.

The movement for vocational guidance and placement sprang up to provide places for these human chunks of coal and it aims to direct each one down the proper coalchute of life or up to the right conveyor. Later we concluded that it was often too late to help a child very much if we waited until circumstances caused him to leave school and seek employment. "If you are going to do anything for the average man, you must do it before he gets to be a man."

The modern director of vocational education is striving to prevent the pendulum from swinging too far in either direction and is honestly trying to help each child prepare himself for whatever calling seems to fit his particular aptitude and in which he will find the greatest amount of happiness and usefulness. This means that the child needs assistance in selecting the proper course of study and subjects within the curriculum.

General Plan of Educational Guidance

1. *Analysis of the situation.*

A. Vocational guidance, in its broad sense, is a continuous process and depends for its success upon the child, the teacher, the home and the community.

B. No one person is great enough and broad enough to look into the future and select a vocation for any child.

C. The child must be stimulated and guided into making his own choice of future occupation through:

1. Self-analysis.
2. Personal data.
3. Counselor's advice.
4. Occupational information.

D. The teacher must be genuinely interested and willing to give the subject of vocational guidance careful thought. Teachers should understand the child's home life.

E. By the time a child finishes intermediate school he should not only have a strong desire to go on through high school, but should know definitely what studies he should take up in high school.

II. *Aim.*

1. To stimulate self-analysis on the part of each pupil and to develop especially every tendency and interest that may affect the choice of a lifework.

2. To increase the child's vocational information through English, history, and mathematics classes; later through life-career classes and a direct study of all local occupations.

3. To study each child's personality, ability, and natural tendencies through the child's school work and the result of mental and manual tests and measurements.

4. To instill enthusiasm into every child and a desire to learn because of the power and ability to meet new situations derived from applied knowledge.

5. To make prevocational work an important part of the intermediate schools, and vocational work a part of the high school curriculum.

6. To guide intelligently each child in the choice of curriculum and electives within the curriculum, with a view to his probable future vocation.

7. To stimulate each child into intellectual activity and vital interest in school work; so much so that the whole plan of education will take on new meaning and become a pleasure, impelling the child constantly to desire more education, and therefore to stay in school as long as possible.

8. To develop the power of each child to the highest plane of personal efficiency in order that he may fill his place in the world according to his talents and with the greatest degree of personal enjoyment and service to his fellow men.

III. *Method.*

1. Self-analysis of each child through the use of a questionnaire designed chiefly to stimulate thought on the part of the child, also for direct information. The child must be led to discover his own capacities, aptitudes, and interests.

2. Study of the character and conditions of occupational life and surveys of local trades and industries, also the professions.

(a) Through English and other classes. Visiting or reading about certain occupations and using the impression and information obtained as themes for essays.

(b) Talks to the class by the teacher or others interested.

(c) Survey by each child of certain selected occupations.

3. Mental and educational measurements of each child.

(a) By a selected method of mental tests.

(b) By a suitable measure of manual dexterity.

4. Forming of life-career classes in ninth grade or high school.

5. Leading each child to an intelligent vocational decision himself and the proper selection of studies.

IV. *Machinery.*

1. The special work of preparing the child's mind for successful educational guidance must be done by:

A. The regular teachers.

(a) English teachers, through English composition, oral discussion or debates.

(b) History teachers by short talks or lessons showing how earlier generations chose occupations and developed individual talents.

(c) Mathematics teachers by pointing out the significance of different phases of mathematics in the various callings.

B. The special teachers.

(a) Industrial arts, agriculture, and commercial teachers by making their work prevocational and show-

ing its relation to out-of-school occupations.

C. Principals, by talks to groups or the entire school on occupational subjects.

D. The vocational director, by talks to students and through assistance in measurements and tests.

E. Persons from outside of school who may be induced to give short talks on their respective occupations.

F. The child himself who must be made to see that education is largely a matter of personal effort.

2. Each child is, if possible, to be under the guidance of the same advisor throughout his seventh and eighth grade course. When he passes into the ninth grade, his guidance records will be sent to his ninth grade advisor and will follow him on through the high school.

3. Guidance of the child in the choosing of his elective studies for the following semester should be based upon:

(a) His personality and school record.

(b) The data given on his questionnaire and record cards.

(c) The ideas and wishes of the child and of his parents.

(d) Careful consideration of other conditioning factors that will occur to the teacher.

4. The selection of every elective study must have behind it a good and sufficient reason and not based upon reputed ease of work, or similar notions in the mind of the child.

5. The principal will assist in different cases by advice to the teacher and personal conferences with the children.

The director of educational guidance should have general oversight of the planning and carrying on of the work, and give help and counsel in individual cases as needed.

V. *Some general considerations.*

1. Educational guidance will supplement the home in giving much needed wise counsel and advice to the child at a critical time in his life, the beginning of the adolescent period. This may be accomplished by

(a) The regular teachers in daily contact with students.

(b) The vocational director in personal talks and interviews.

(c) Interview by appointment with some professional or businessman who is a member of an advisory board.

2. Educational guidance is a continuous process and requires a combination of private work and classwork together with counselling and followup work.

3. Many children develop a disloyal attitude toward school and an antagonism toward authority which can be entirely changed by getting him into the right course of study, and giving him a definite aim in life.

4. Educational guidance offers a rich field for teaching the individual child his relation and duties to society and the state by giving him lofty ideals, better standards of living, and making him a happier citizen.

Outline Course in Household Mechanics for Eighth Grades

Lyle J. Shaw, Escanaba, Mich.

THIS outline course in Household Mechanics is made from several courses which I have studied and taught in the seventh and eighth grades.

The course is outlined for 24 boys (the same could be used for larger classes, however) reciting forty periods of ninety minutes each. The subject matter is taught by class demonstration with the aid of typewritten job sheets and reference reading. All units are in progress at the same time as the class is divided into groups rotating according to the following schedule:

Outline Course in Household Mechanics for Eighth Grades

Units of Subject Matter

I. SHEET METAL.

1. References.
   - (a) Prevocational and Industrial Arts, Wood and Smith.
   - (b) How to Solder, Nokorode Co.
   - (c) The Rafco Guide.
2. Shop Work.
   - (a) Tin a solder copper.
   - (b) Out of tin cans make a scoop and cup.
   - (c) Repair a kitchen utensil with the use of sheet metal tools.
   - (d) Make a garden trowel.
   - (e) Make an air tight varnish or shellac container.
3. Facts to be learned.
   - (a) What is a solder copper?
   - (b) What is solder?
   - (c) What is meant by tinning a solder copper?
   - (d) What is flux?
   - (e) What is a templet?
   - (f) What is a lap seam?
   - (g) Give directions for the use of rivets.
4. Abilities to be gained.
   - (a) The ability to use solder and sheet metal tools in connection with the home.

II. WOODWORKING.

1. References.
   - (a) Prevocational and Industrial Arts, Wood and Smith.
   - (b) Essentials of Woodworking, Griffith.
   - (c) How to Paint, an advertising booklet by Sears Roebuck & Co.
2. Shop Work.
   - (a) Make a window screen.
   - (b) Make a ladder.
   - (c) Repair and refinish a piece of furniture.
3. Facts to be learned.
   - (a) What is a grain in wood?
   - (b) What are wood fasteners? Name some.
   - (c) What is a miter joint? How made?
   - (d) What is priming?
   - (e) How many coats should new wood be painted?
   - (f) For what is glue used?
   - (g) How do you refinish a piece of furniture?

4. Abilities to be gained.
   (a) The ability to use ordinary tools and to refinish furniture.

III. MASONRY.

1. References.
   (a) Prevocational and Industrial Arts, Wood and Smith.
   (b) Alpha Aids.
2. Shop Work.
   (a) Make a foot scraper.
   (b) Make a bird bath.
   (c) Lath and patch some plaster.
3. Facts to be learned.
   (a) What is meant by a 1:5 mixture?
   (b) What is concrete?
   (c) How is it sold?
   (d) Name two kinds of plaster. Which is mixed with sand?
   (e) Why are cracks left between the lath?
   (f) How is plaster applied?
4. Abilities to be gained.
   (a) The ability to use the tools and material for repairing masonry in the home.

IV. PLUMBING.

1. References.
   (a) Mechanical Devices in The Home, Allen.
   (b) Mechanics of the Household, Keen.
2. Shop Work.
   (a) Repair and place unions on the end of garden hose so that the hose may be attached to the sill cock on one end and nozzle on the other.
   (b) Repair a compression faucet.
   (c) Repair a Fuller faucet.
   (d) Clean a drain trap and read a meter.
   (e) Repair a flushing tank.
3. Facts to be learned.
   (a) How are hose made?
   (b) For attaching to a sill cock is the union threaded inside or outside? For attaching to a spray nozzle?
   (c) What are the principal parts of a compression faucet?
   (d) What causes a compression faucet to leak around the stem? Nozzle? How repaired?
   (e) Name the principal parts of a Fuller faucet.
   (f) What is a trap? Explain its use.
   (g) Explain the supply valve. Flush valve.
   (h) What are usual causes of trouble in a flush tank?
   (i) What is a sill cock? Hose bib?
4. Abilities to be gained.
   (a) Ability to make minor repairs on plumbing fixtures in the home.

V. GLAZING.

1. References.
   (a) Prevocational and Industrial Arts, Wood and Smith.
   (b) Sears & Roebuck Co. (catalogue).
2. Shop Work.
   (a) Cut a piece of glass and glaze a sash.
   (b) Repair and hang a window shade.
   (c) Set glass in a door or mirror using wood strips.
3. Facts to be learned.
   (a) How do you cut glass?
   (b) What is single strength glass? Double?
   (c) Why should a sash be primed?
   (d) Explain how to apply putty to a sash.
   (e) Explain the principle of a window shade.
4. Abilities to be gained.
   (a) The ability to glaze a sash, cut glass and make adjustments so that the window shade will operate correctly.

VI. ELECTRICITY.

1. References.
   (a) Practical electricity for Beginners, Willoughby.
   (b) Mechanics of the Household, Keen.
2. Shop Work.
   (a) Dismantle, repair and assemble a lamp extension cord.
   (b) Install a bell installation using two dry cells.
   (c) Remove, repair and reinstall a flush switch.
   (d) Test and replace fuses.
   (e) Remove, repair, and reinstall a surface snap switch.
   (f) Dismantle, repair and assemble a heater cord arrangement.
   (g) Read a kilowatt-hour meter.
   (h) Remove, repair and reinstall a flush receptacle.
   (i) Clean and lubricate a small motor.
   (j) Connect a transformer to a bell system.
3. Facts to be learned.
   (a) What are some of the troubles in lamp and heater cord arrangements?
   (b) Name the parts of a simple bell system and show by diagram how they are connected.
   (c) What is the first thing to do in repairing switches?
   (d) Explain the use of a fuse plug.
   (e) What is amperage? Voltage? Kilowatt-hour?
   (f) What is a short circuit.?
4. Abilities to be gained.
   (a) To understand fundamental requirements of a simple electrical circuit.
   (b) To make repairs and use ordinary electrical devices.

P - Plumbing
E - Electricity
M - Masonry
W - Woodwork
S - Sheet metal
G - Glazing

ESCANABA PUBLIC SCHOOLS

HOUSEHOLD MECHANICS SCHEDULE

| Pupils name | | |

BRUCE-MILWAUKEE

INDUSTRIAL-ARTS MAGAZINE

E. J. LAKE S. J. VAUGHN

Editors

EDITORIAL

THE SUMMER SCHOOL

There has probably been no greater force in American education than the summer school. Many a teacher has been pulled out of a rut by a six weeks' summer course. Others have completed the requirements for degrees, while still others have pursued graduate studies that have made progress for them not only possible but inevitable.

The summer school is a great corrective. It often deals a death blow to conceit. It sometimes puts spirit and courage into a teacher by revealing to him the excellence of his own work and methods. Sometimes one gets a wholly new point of view which changes his whole attitude toward his work and his whole outlook on life. The contact in class with teachers from widely separated points gives the teacher a perspective that is almost impossible to get any other way.

No beneficial results are possible, however, in a summer school for any except those who have the proper attitude; and the proper attitude is the *student attitude* —the attitude of the *learner, not* the *teacher.* This is one of the severest and absolutely most important lessons to be learned by the teacher who would go to school —he must cease to be the teacher. This does not mean that he must give up all of his own initiative and his own opinions. It simple means that he must submit himself to the instruction of others with an open mind, and a just regard for the rights and opinions of those who undertake to instruct him. Many a summer's work has been ruined for teachers who insist on carrying their teacher attitude into the classes with them when they become students.

Furthermore, it is not necessary to regard a summer school as a continuation of the "same old grind." The absolute change should make it somewhat of a recreation or vacation. The civilized man rests not by ceasing entirely from his labors, but by changing scenery and occupation.

For the next generation, at least, a large part of the hope for progress in our education lies in our summer school.

NO CONFLICT BETWEEN TRADE SCHOOLS AND HIGH SCHOOLS.

An enthusiastic lecturer was commenting upon the fact that a certain city was changing one of its high schools into a trade school. His generalization was to the effect that "the same thing would be done to all the high schools in a few years."

It is such loose thinking and talking as this that causes most of the trouble in education, as elsewhere. The most radical intelligent advocate of vocational education would never think of going to such an extreme as to propose the destruction of our high schools and the substitution of trade schools.

At the beginning of the movement for practical education there was the element of rebellion against the fixed curriculum that required all students to take certain specified courses in ancient languages, etc., without regard to their aptitudes or future occupations. Now, to turn about and demand that all students learn trades without regard to their probable future occupations would be the height of absurdity and inconsistency.

The intelligent advocate of vocational education does not condemn general education. He recognizes the necessity of the general high school or the general academic courses in the high school. He wants the variety of work and courses multiplied so that each student may find studies and occupations suited to his mental and physical needs and in line with his ambition for his future work.

Let's have trade schools, of course, but let's not commit the absurd folly of crippling our present excellent high schools. The demand is for *broadened* opportunity, not *narrowed* opportunity. Let's *add* to what we already have and not give up a rich inheritance in trying to find a substitute for it. Let's have *both.*

THE JOY OF A JOB IN VOCATIONAL TRAINING

If the era of industrial education as now being developed in the United States carries any advantages over the old-time apprentice system, it must primarily be found in greater accuracy and thoroughness of operation and a finer sense of honor in production service. But, it ought to carry more. It ought to foster the pleasurable side of labor.

The relations between the old-time journeyman and his apprentice depended largely upon the character of the former and his ability to impart the necessary training. If the apprentice became efficient, it was because his master understood the art of training. If the apprentice succeeded in becoming a fullfledged journeyman, he sometimes, too, imbibed something of his master's virtues, viewpoints and angles of life. If the master was a grouch, the apprentice may have found it difficult to remain an optimist.

In brief, the journeyman, or individual employer, who trained the apprentice was not always a happy dispositioned man who saw joy in the task of the day and whose outlook upon life was guided by the best of standards. He had his temperamental peculiarities.

The trained schoolmaster in the industrial field realizes more than any one else the satisfaction which attends the processes of subjecting inanimate things to the rule of the eye and the manipulation of the hand.

Like the graceful figure which the sculptor conjures out of a rough block of stone, and thus brings joy to himself and the world, so in all trades the processes of turning raw materials into the finished product have their compensations.

The worker must realize that his handiwork constitutes a contribution to the world's work and to the sum of human happiness. The joy of a job must find its best impulse under the guidance of the vocational training master. He, above all men, must appreciate the value of an enthusiastic approach to a task and the satisfaction that comes with the successful completion of the same. The future efficiency of industrial America will not only depend upon the manual dexterity of the individual worker, but also upon the mental attitude of that worker to his job.

Thus, one of the advantages of modern vocational training, as distinguished from the old-time individual employer and trainer of apprentices, must be found in a higher appreciation of the dignity of labor, a finer adjustment of the relations between employer and employe, and a deeper inculcation of the joy of doing things well.

THE SHOP

The ultra-conservative teacher of manual training who after another year of conventional wood work, tool processes, and blue-print plagiarism should read by way of diversion the chapter on "The Shop" in "Shackled Youth" by Edward Yeomans.

Not that we recommend moving our shops to the seashore in order to study ships and navigation as the only romantic industrial interest of humanity or that we condemn superintendents in general for calling upon the school shop to do practical chores in the way of furniture making and repairs; but just in order that the too prevalent conception of manual training as a bench job for a tinkering boy may get a shock.

Perhaps the close of a school year is the best time for this shock because it should be the beginning of a summer season devoted to prospects for next year. We agree with Mr. Yeomans that the teacher of the Industrial Arts has greater opportunity than the teachers of other school subjects to develop in boys and girls the ability and ambition to express themselves and thereby develop themselves into active, useful, and happy citizens by devising and making somewhat original things.

We are not prepared to say just what these various things should be. We believe they should not be the same things for all boys and girls in all school shops. We are inclined to limit the kinds of work done in any one shop to a few that may be best done, but the subject of Industrial Arts involves interest and study and work in a variety of industrial lines. Then, too, it involves Art. Not Art that is an imitation of objects already designed, but the study of effects in design and applied to the purpose with reason and propriety. Read Mr. Yeoman's chapter and then use your pedagogical judgment as to how much of this rather visionary shop will fit into your school conditions. After all the most important part of the school shop equipment is the teacher.

THE PARENT TEACHERS

The Parent Teachers' Associations have for the most part been engaged in securing funds for equipment which could not be secured by the usual methods. Pictures, musical instruments, play-ground apparatus, and such things which school boards could not supply have been secured through the persistent energy of the parents for the particular schools which their children attend. In some localities there has developed no little rivalry between the parents of different wards in the support of their schools. The motive has in some cases been decidedly for "me and mine" but now the organizations are becoming city and state-wide. The selfish incentive of fond parents to give their children every advantage is developing into a splendid and much needed interest in the public schools.

Our schools have suffered long for the need of this interest.

The direct activity of parents in school affairs will inevitably counter with routine school methods. Some school teachers and some school executives who stand jealously upon their professional dignity will need to cultivate the diplomacy of the family doctor. With this diplomacy they must develop the authority of the doctor. The authority for a particular educational treatment may be even more difficult to establish than for a particular medical treatment. Then too the doctor is called in only for desperate situations which gives him the liberty to use heroic methods if necessary.

The unfortunate teacher is in regular attendance and under the critical eye of many fond parents who may at times be blind to the case of their own particular interest.

With better understanding of school methods by parents we surmise that the formal school attempt to teach by precept and text will need revision. Methods of learning by doing will make strong appeal to the parents interested in school after years of necessary doing. As representatives of the homes and of the community parents are quick to see the value of study made vital by actual application. The parent may learn much by going back to the school as a representative of the community but the teacher may in turn learn much of the art of teaching by affiliation with the home and community. May we not hope that this affiliation of school, home and community will bring about the ideal for which many teachers have worked?

Beauty is a real test of value and when it is lost there is nothing that can take its place but a sense of humor—and the two are apt to live and die together. Beauty is also much more a "natural right" of man than is the electoral franchise or the "right" of free speech. It is not an amenity of life, for it is an essential of good living, but it is a great joy and a great compensation.—Ralph Adams Cram.

A Camp Car and the Open Road Used as a Means for Avocational Education

Albert G. Bauersfeld, Supervisor, Technical Work in Chicago High Schools.

THE articles appearing in this Magazine are generally of a serious, thoughtful kind which aim to help teachers of industrial arts for their work in the shops and drawing rooms during the school year. The majority of teachers who read these articles are an ambitious lot who work hard in the shops during the school year, take on additional evening-school work, and then during the summer months when they have nothing to do, they either teach summer school or attend classes at some university or training school. I have known a goodly number of industrial-arts teachers who have kept up just such a pace year after year until finally some of them are like the darky's wagon whom our friend, Mr. Samuel J. Vaughn, likes to tell the story of "Yous a mighty good wagon, but it dun broke down." Furthermore, we have been writing reams and reams about vocational education for the past ten years, but very little has been said about a teacher's *avocation*.

The purpose of this article is, therefore, to suggest how an industrial-arts teacher may use his skill and knowledge as a mechanic for his leisure hours. If you want to travel to the end of the rainbow with your family both large and small during the glorious days of vacation, the thing to do is to build a camp car where the labor of housekeeping and the cost of living in the open is less than if you stayed at home. I have traveled in a big brother to a Ford for over 60,000 miles to the "golden west" and through the "elite east." Most of the time we used an auto tent equipment, and like wandering Arabs we folded our tent in the morning and wandered from sunrise to sunset. The Yellowstone Trail, the Lincoln Highway, the Mohawk Trail and the Old National Trail are all old-time friends. They bring to us pictures of scenes enroute and of tourists who happy after the day's journey are grouped around camp fires, singing songs and telling stories. These recollections are always stimulating and help one to cheerfully carry on his daily toil through the winter days and weeks of grind.

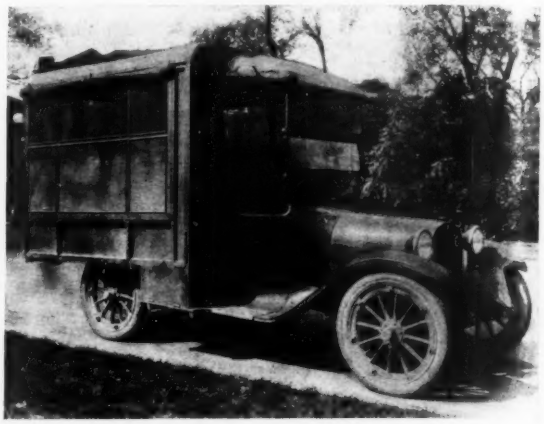


FIG. 1. CAMP CAR READY TO TRAVEL.

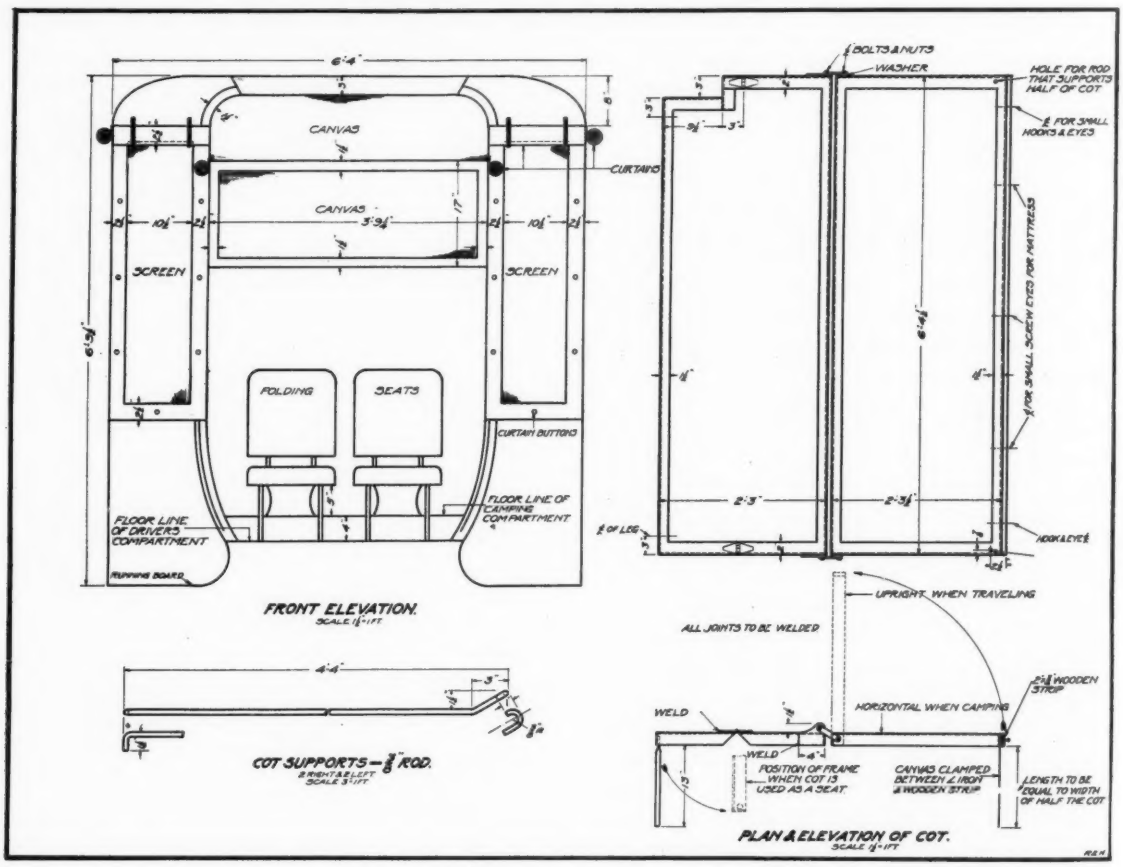
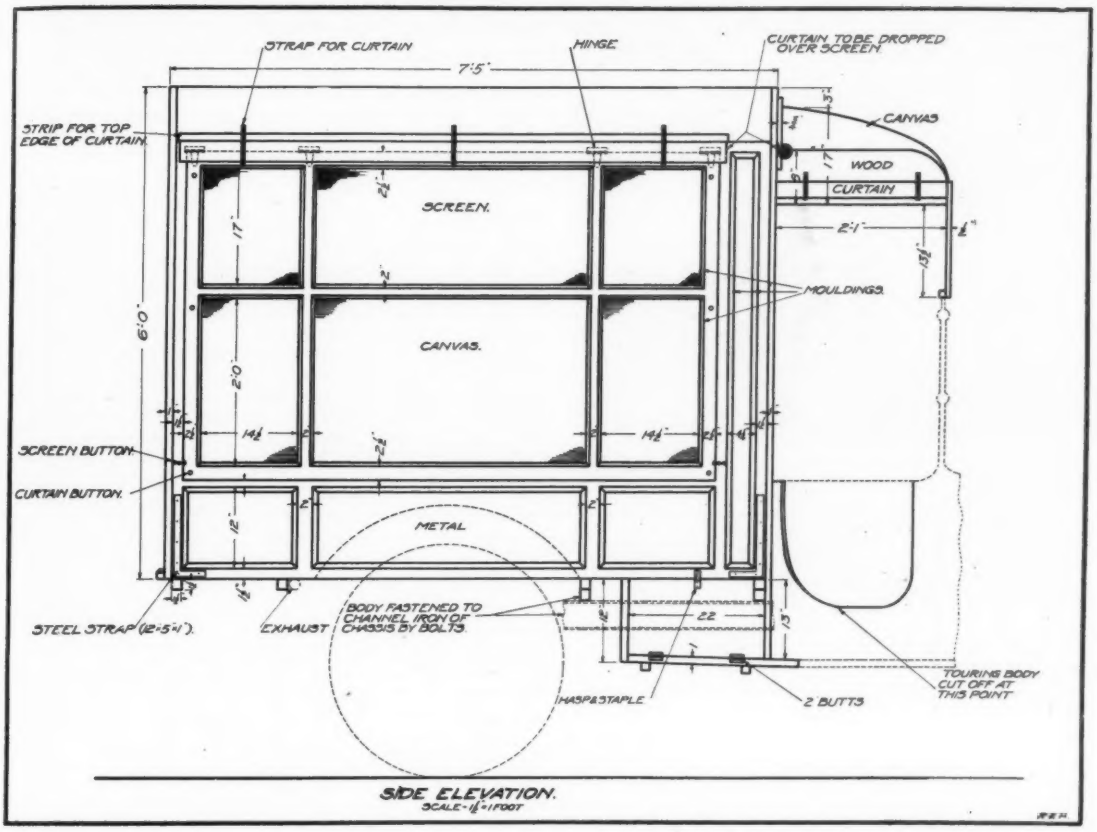
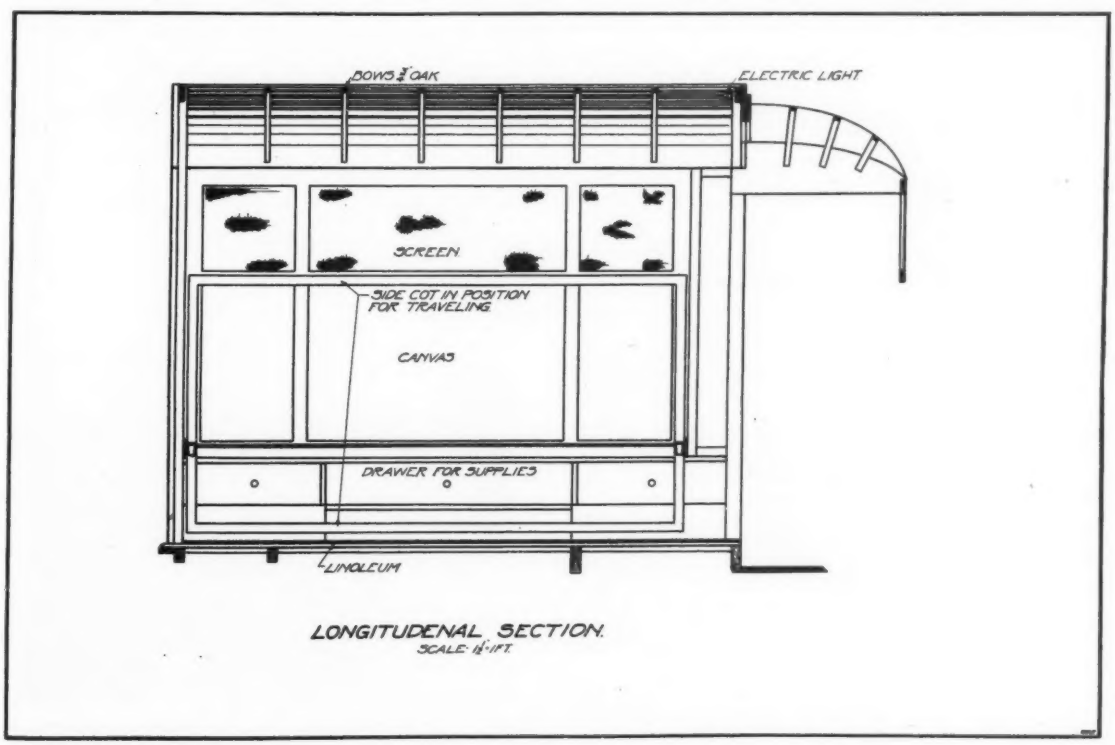


PLATE I. FRONT ELEVATION OF THE BODY AND PLAN OF THE COT.



Three summers ago our family traveled the eastern trails for five weeks. We visited Detroit, Buffalo, Albany, North Adams, Boston, Plymouth Pageant, Providence, New York, Philadelphia, Baltimore, Washington, Mt. Vernon, Gettysburg, Wheeling, Columbus and Indianapolis. Besides stopping at most of the historic shrines, we en-



PLATES II AND III. SIDE ELEVATION AND LONGITUDINAL SECTION.

FIG. 3. FRONT VIEW OF CAR SHOWS HOW ONE COT AND SIDE ARE HELD UP BY ½" IRON RODS WHICH FOLD BACK WHEN NOT IN USE, LIKEWISE THE CURTAINS ARE TUCKED AWAY.

to Lane Tech." Mr. William J. Bogan, the principal, never says no to anything that is unique and progressive—he is always ready to try anything once if he can see any good in the proposition. Furthermore, the Lane School shopmen support their chief whole-heartedly and are always ready to lend a hand when it comes to building new contraptions.

Most of the work on this camp car was done during five weeks of summer school. Mr. Victor Olsen, teacher of woodworking and Mr. William A. Sears, teacher of auto mechanics were the men who really put this job over. Without them my dreams would not have been realized that summer. At the time I was teaching in the morning at the Chicago Normal College, and then had to travel eight miles before I could work in the afternoon on the camp car. Although some of the school boys helped in the building of this car, most of the work was done by teachers. This camp car was truly a project problem for all of us. We had to design, invent, create, and adapt all sorts of ideas, because as the body started to take shape and form, we began changing and enlarging the project from day to day. Almost every Lane shop man

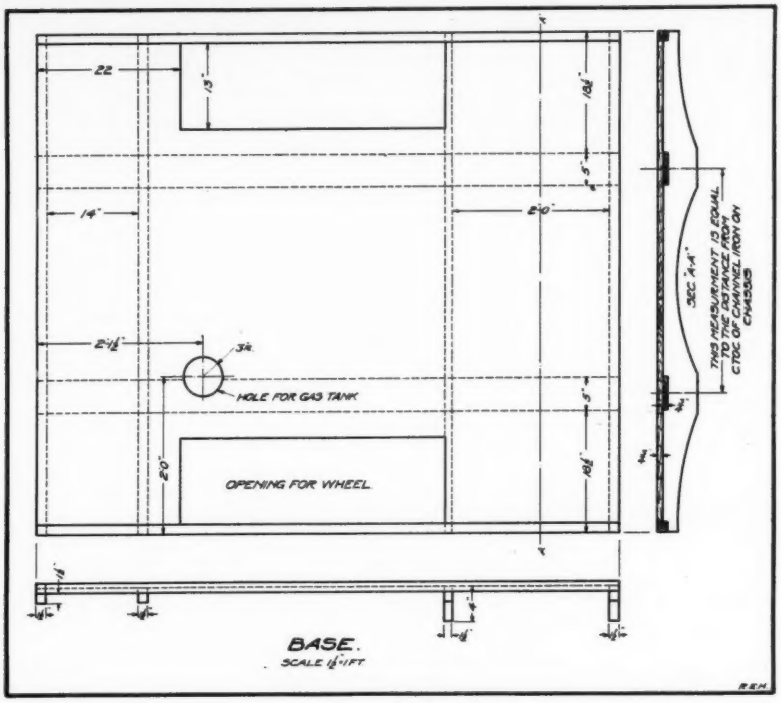


PLATE IV. PLAN OF THE BASE.

joyed from day to day the wonderful world of mountains, plains, valleys, lakes, rivers and ocean. My two daughters learned more geography and history that summer than they ever learned from their lessons at school. The total bill for these five weeks of outing was only $200.

To make camp at night after a long day's travel and to hustle and break camp in the morning day in and day out, gets to be work after all, which, of course, is the thing one tries to leave behind him after he sets out for a vacation. Consequently, the thing to do is to reduce those chores to a minimum. Then why not be like a turtle and carry your house and bed with you?

With this thought in mind, I began to study the outfits of fellow tourists and then started to make sketches of what I thought would be the most efficient and simple type of camp car.

The next thing to do was to find a school shop that would be willing to help me build this house on wheels. Many of the school men of the middle west have a saying that runs like this, "If you want anything done why go

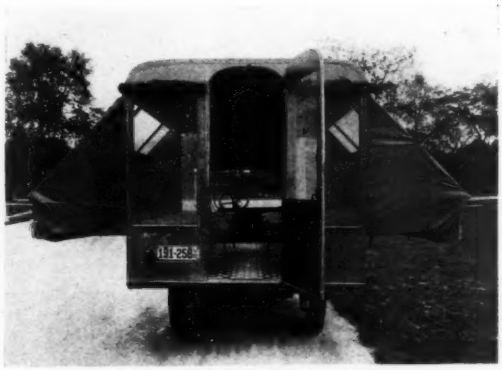


FIG. 2. COTS LAID OUT FOR THE BEDDING. SCREEN EXPOSED FOR WE EXPECT A WARM NIGHT WITH NO RAIN. MOSQUITOES STAY OUTSIDE.

had a hand in some part of this camp car. As to friendly advice and good natured joshing, we were like an open forum of radicals with never-ending sessions of debate. I believe every student and teacher at the Lane Summer School made a business of looking in at the open door of the shop each day and of watching with interest the progress we made. At last the job was done—which happened to be the week of the big Chicago street car strike when every one had to ride in busses. The tryout of the camp car was made by piling in ten "Lane Indians" and then racing over street car tracks, boulevards and worn out pavement to see if a 25 mile speed limit would tip or break the car. The car came back in good shape with the "Lane Indians" yelling and with no one arrested for violating traffic regulations.

The accompanying detail drawings and pictures, I believe give a good technical description of the Camp Car body. What we did was to cut the touring body of a Dodge car, vintage of 1917, right across the center line of the front doors. This body was stored and replaced later on in the fall. By sectioning the body in this way we were able to leave the instrument board and the wind shield undisturbed. The two car bodies are, therefore, interchangeable, and it only takes one day's work to convert the car either way.

The camp car body was built of ash and poplar, using standard type of wagon body construction with bowed ribs for the top. Heavy canvas khaki ducking was purchased from an "army goods" sale store. The drawings show that the sides and door are partially screened for comfort in hot weather; provision was also made for rolled canvas curtains in case of rain. Full-size steel army cots were hinged, two on a side. These provide seats for passengers in the day time, and in the evening when lowered, are used as beds. Storage space in the shape of drawers and lockers was provided below the cots. Cupboards, accessible from the outside, were also provided underneath on the sides and rear end of the body. Two folding seats from a junked seven passenger car are provided in front for the driver and one passenger. Although this camp car provides four comfortable beds at night,

FIG. 4. REAR VIEW SHOWING BLACKBOARD ON DOOR, FOLDING FRONT SEATS, AND ARMY COTS, ONE OF WHICH IS FOLDED DOWN AS A SEAT, WHILE THE OTHER MAY BE USED AS A COT FOR THE KIDDIES' AFTERNOON NAP WHILE TRAVELING ALONG.

additional accommodations may be had for two guests by carrying two folding army cots and two envelope curtains which are hung from the base of the two cots folding out. The weight of the camp car is about 1,000 lbs. and the cost for lumber and material was approximately $75.

A tour was made that summer during the remaining five weeks of vacation by circling around Lake Michi-

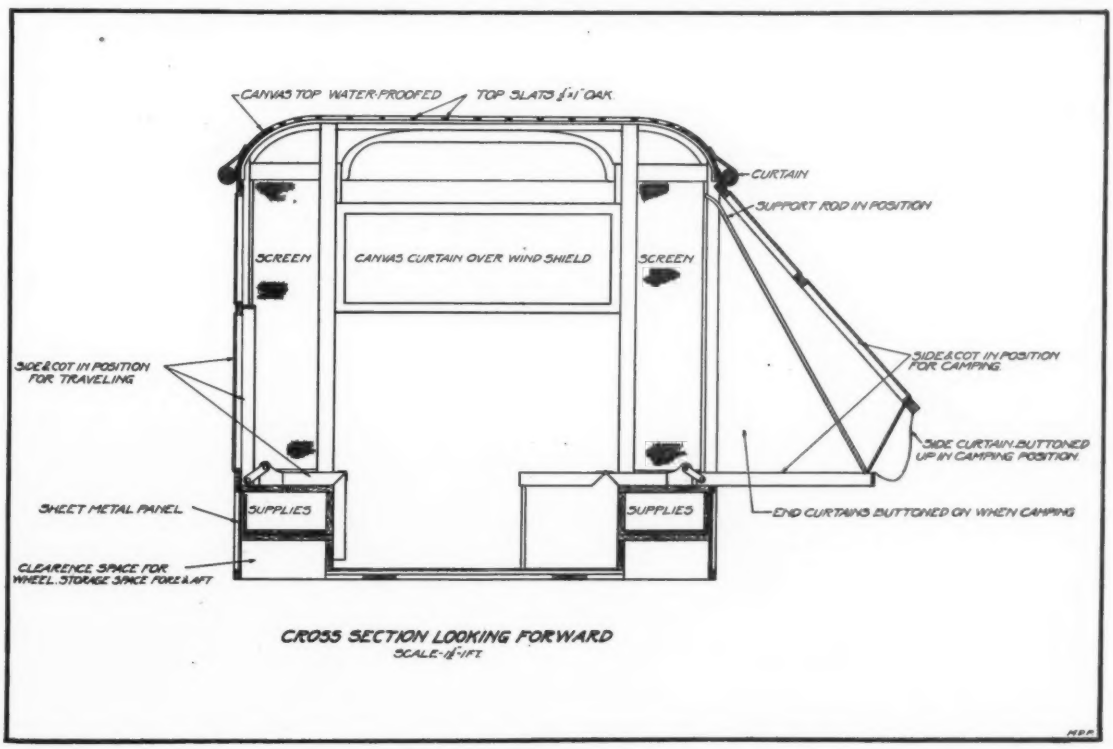


PLATE V. CROSS SECTION OF THE BODY.

gan. We found that this prairie schooner was very easy to handle on the road and it was no task at all to make up our beds whenever we decided to camp for the night. Throughout the east and the west good camping sites are provided for, either by the state or by the cities. These camp grounds furnish the tourists with many accommodations; one can even get milk for the baby in the morning if you happen to have a baby along with you. In addition, these camping grounds are sort of social centers where the tourists and townspeople exchange news items of the day.

Now at the "Soo" no shop-worn excuses like that are needed. The natives take you to the mill race where fifty turbine generators churn the water at a terrific speed. These turbines are fed by a swift flowing canal which comes from White Fish Bay, Lake Superior. At times this canal brings with it schools of herring which are chopped into pieces by the turbines. Now by standing on the pier over the mill race, one can look down and see an army of giant fish—muskalonge, pike, pickerel and bass—swimming in perfect line formation and waiting for their meal of chopped herring. If you are badly in need of fish for supper, you join the pot hunters and drop a line with a one pound sinker to hold it in place. But that kind of fishing is not much sport. To get some fun and action one rents a boat farther down the river where the musky weeds grow, and that is the place whree Mr. Kuns and I had our battle royal. If you like rainbow trout fishing, you can be accommodated in the Rapids of the Sault Ste. Marie river where Indian guides take you out into the whirl-pools and among the rocks in a canoe.

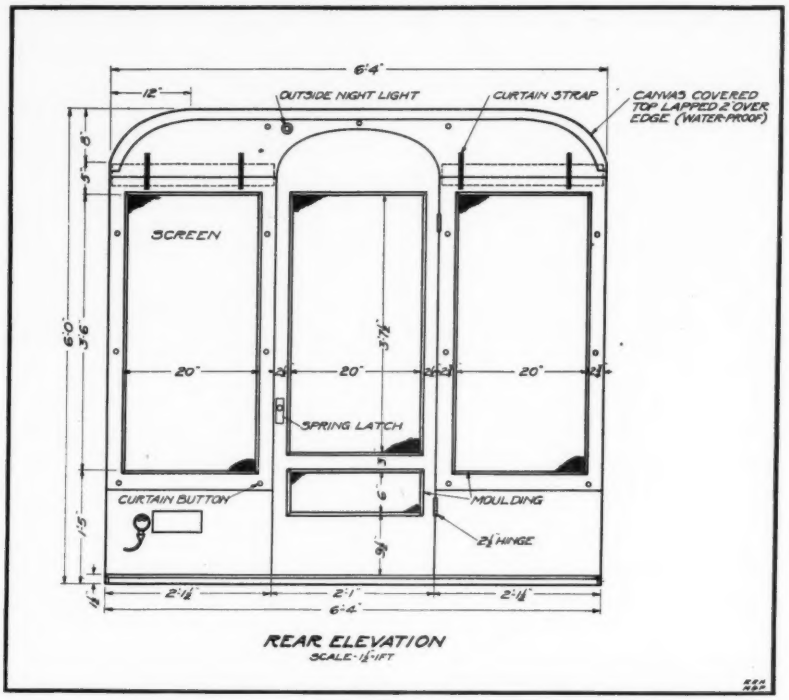


PLATE VI. REAR ELEVATION OF THE BODY.

Wisconsin and Michigan are two ideal states for campers and tourists. The roads are good and are plainly marked. The camping site at Sault Ste. Marie is the best ever. The "Soo" is the only place I ever found where fishing is good all the time. It was at this ideal spot where I found a friend in Mr. Ray F. Kuns. Previous to his coming, the natives thought my camp car was just about right, but when the Kuns' Traveling Bungalow pulled in one evening, we completely lost our audience and in fact our whole family went over to inspect that palace on wheels. He simply has all the conveniences of home and then some; furthermore he can prove his claims, because later on when we became better acquainted, Mr. Kuns challenged me to try to think of something that he didn't have. I tried three times and lost. Professionally I had known of Mr. Kuns for some time past and had a high esteem of his ability to write a textbook on auto mechanics that is not only clear enough for any boy to understand, but it is comprehensive enough to satisfy the most critical teacher. I have now learned to know Mr. Ray Kuns as a gentleman and a good fellow. He made me a friend for life by landing that big fish I hooked—even if he had to bail the fish out of the water in a three-foot trout net.

Speaking of fishing, I want to take a moment to tell you why the natives at the "Soo" never use that trite alibi: "Well it was good fishing here about a month ago." Did you ever fish all day without any luck and then wonder if there was one fish per cubical mile in that particular lake? Then I am sure you can appreciate how aggravating that old alibi sounds.

The topic of fishing was injected into this article simply to give the reader an idea of one place to go to with a camp car if he should happen to belong to the great Isaac Walton Club.

The open road to Yellowstone over the Rockies and to the Pacific Coast is a call which is answered by a goodly number of industrial-arts teachers each year who enjoy seeing the wonders of our country and living out under the clear skies. The building and using of a camp car is an excellent hobby for any shop teacher. This project gives one free play in creating with one's hands a traveling home that will bring big returns to a teacher and his family at the close of a strenuous year of work.

You perhaps would be interested to know how many industrial-arts teachers are building camp cars and how certain problems are solved. Of course, each man thinks his own creation is the best ever. Two teachers at the Englewood High School, Chicago, Mr. Chas. P. Burnham and Mr. Maurice J. Archbold, have built and used camp trailers which they claim are superior as to service above all other car camping outfits. A description of these camp trailers will appear in a later issue.

PROBLEMS & PROJECTS

This department aims to present a wide variety of class and shop projects in the Industrial Arts. Successful problems are invited and will be paid for. A brief description of constructed problems, not exceeding 250 words in length, should be accompanied by a good working drawing. The originals of the problems in drawing and design should be sent.

Problems in benchwork, machine shop practice, turning, pattern-making, sewing, millinery, forging, cooking, jewelry, bookbinding, basketry, pottery, leather work, cement work, foundry work, and other lines of industrial-arts work are desired for consideration. The editors will not accept the old hackneyed problems of footstools, taborets, towel holders, etc., which have been made from time immemorial, ad nauseum.

A JOB IN HOME MECHANICS

F. E. Tustison, The Stout Institute

Job Specifications: To file a key for a common door lock. The door key is a common convenience. If it is lost or broken, it must be replaced. Sometimes we need duplicate keys for the same lock. The boy with average skill can make such a key by filing it from a regular key blank. If a pattern is at hand, the job is an easier one. It is more difficult to make a key without such a pattern, but it can be done. Accuracy is the key note, if you want the key to fit. Note the following drawing which shows you a common key and names the parts.

FIG. 1. KEY BLANK.

Material: Common mortise or rim lock, key, key blank.

Tools: Small (warding) file, mill file, metal vise.

Procedure: (With pattern)

(1) Select key blank. Key blanks can be secured at the hardware store. Select one that requires the least amount of filing.

(2) File to size. Clamp the key blank in the vise and file carefully. Measure and check often, for metal filed off can not be replaced. See that the distance between end of the shank and the inner end of the bit checks with the pattern. The small notches in the key are called wards.

(3) Test the key. The key should work the lock smoothly.

Procedure: (Without pattern)

(1) Remove lock and cover. See job sheet on respringing door lock for directions.

(2) Select key blank. Select blank that will enter key hole or one that can be filed to enter. A small projection in the key hole may necessitate filing a groove (ward) in the bit.

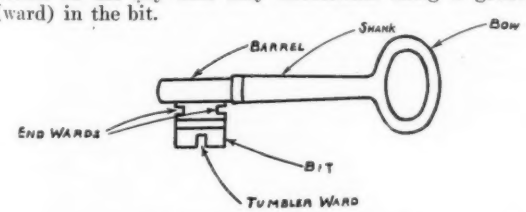


FIG. 2. DETAILS OF A TYPICAL KEY.

(3) File bit to length. Insert key blank from the back (until the shank touches) and determine how much must be filed from the bit so that the key will begin to turn. Make final test with cover held on.

(4) File end wards. Note the projections on the inside of the case which prohibit the key from turning. File wards which will allow the key to turn almost one-half of a revolution.

FIG. 3. FILING A TUMBLER WARD.

(5) File tumbler ward (or wards). Insert key and note where it strikes the tumbler. File ward until it raises the tumbler to the right height. The tumbler is at the right height when you can throw the belt back and forth. If there is more than one tumbler, a corresponding number of wards must be filed.

(6) Assemble and test. Test thoroughly for the working of the key. If key strikes or it catches and does not work smoothly, locate the difficulty and refile carefully.

Questions:

1. What is a warding file?
2. What are the uses of wards in a key?
3. What is the use of the tumbler?
4. What is meant by a three tumbler lock?
5. What is the advantage of a three tumbler lock?

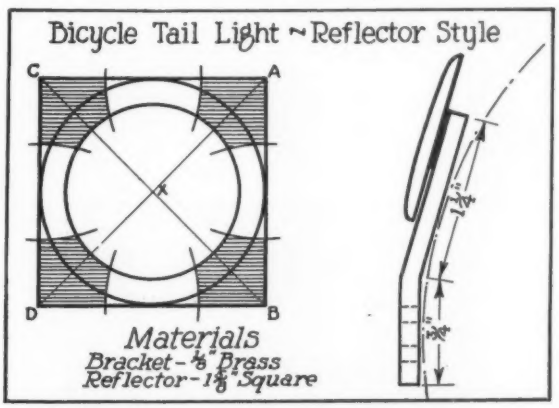
Record:

Name..... Class.....
Date begun.....Date finished.....
Have you answered all of the questions?.....
Instructor's Grade.....

A BICYCLE TAIL LIGHT

Floyd J. Smith, Miles City, Mont.

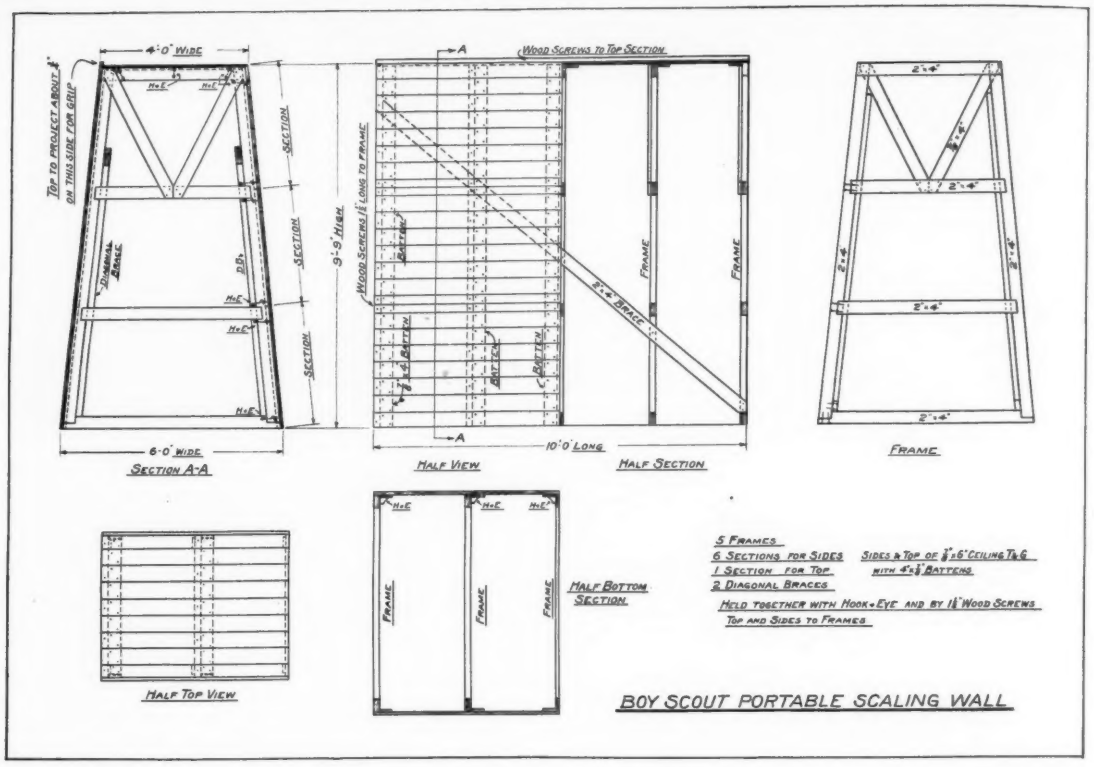
The efficient element of this reflecting tail light is the polished sheet metal. It is especially essential that the piece of metal be handled without the fingers coming in contact with it. In making these tail lights in the Miles City Schools the boys wore gloves with good results.



DETAILS OF A REFLECTOR TAIL LIGHT.

In making the tail light, cut a strip of ⅛" brass, ¼" wide and 2" long. Bend it to the shape of the rear mud guard of the bicycle on which it is to be used. Drill two ⅛" holes in the lower ¾" part through which ⅛" stove bolts can be set to hold the light to the mud guard.

Cut a piece of reflector tin 1⅝" square. Mark faint lines across the corners with lead pencil. With a good divider at the intersection of these lines, find the true center of the tin; scratch a 1⅝" circle and with the

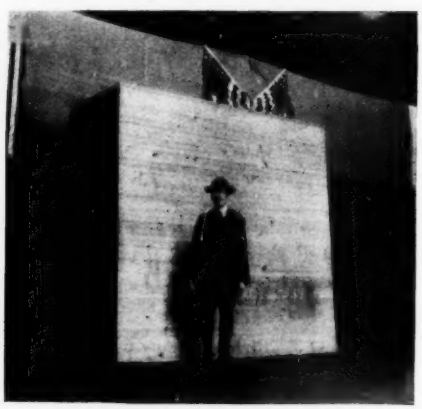


same center point an inner 1¼" circle. Next move the divider legs to length A-X. At point A and along line A-C scratch a line cutting the side of the square; the outer and the inner circle. Now reverse the divider, placing one point at C and along the line C-A scratch a line cutting the square; the outer and inner circle a second time. Repeat this along the lines A-B, B-D, and C-D. Now trim away all shaded portions leaving the inner circle as the reflector size and four projecting pieces of tin.

Next, cut out a circle 1¼" in diameter from a piece of red celluloid or red glass to be used as a front or "bull's eye." Place the glass or celluloid against the reflector circle and bend projecting tin strips forward and over glass or celluloid thus holding it firmly in place. Solder reflector to upper end of bracket and tail light is finished, ready for use.

BOY SCOUT SCALING WALL
David Petrie, Paterson, N. J.

The scaling wall for boy scouts, illustrated in the accompanying drawing and photograph, was built by boys of the eighth grade in School No. 21, Paterson, New Jersey, for the Ninth Annual Boy Scout Rally, held in the Paterson Armory.

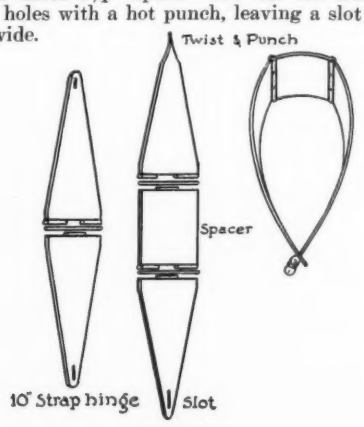


THE COMPLETED WALL.

The wall is portable and can be taken apart to be stored for future use. It is 10' 8" high; 6' wide at the bottom and 4' wide at the top. In its construction we used twenty pieces of 2"x4"x10' 0" studding; 320 square feet of ⅞"x6" W. P. ceiling; 120 lineal feet of ⅞"x4" batten; 9 dozen 1½" screws and 7 dozen screw hooks and eyes. With the exception of the laying out of the ribs the entire work was done by the boys.

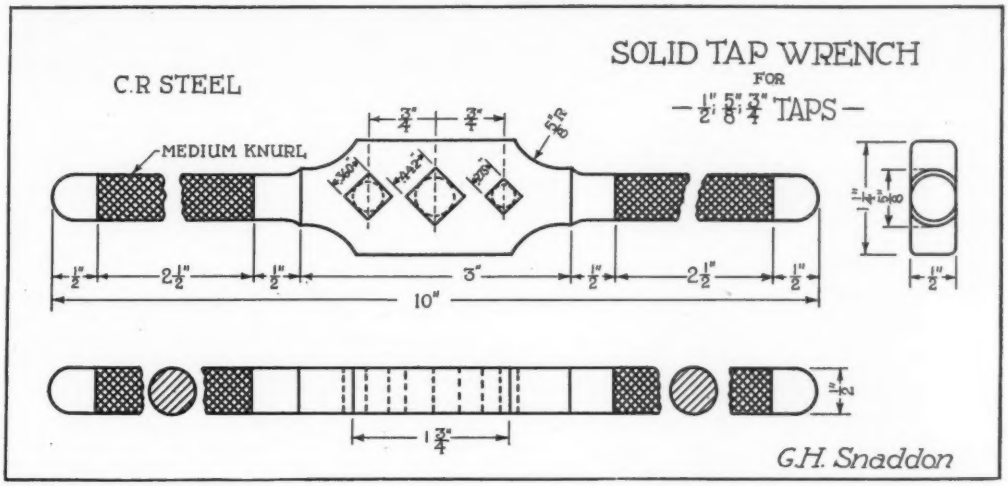
AUTO WHEEL LOCK
Geo. S. Moore, Topeka, Kans.

This lock is made of a 10" strap hinge. Remove the pin or center rivet. Heat the pointed end of one strap and punch two holes 1¼" apart. Cut out the iron between these two holes with a hot punch, leaving a slot 1¼" long and ½" wide.



AUTO-LOCK.

The pointed end of the other strap should be heated and drawn out slightly and a round hole should be punched ½" from the screw hole. Cut out the metal between the holes, forming a hole approximately ½" long



and ¼" wide. While the metal is still hot, place the strap in a vise and turn the tapering point at right angles with the balance of the strap. The end of this strap is to go through the slot in the other strap. Now bend both straps until they have approximately the same curve as an automobile tire.

Cut a piece of iron the same width and thickness as the wide end of the straps. Cut the ends while hot to form a hinge on the ends of both straps. Insert the pin or rivet and the auto lock is completed.

A SOLID TAP WRENCH

G. H. Snaddon, Detroit, Mich.

In making this wrench use ½"x1¼" cold rolled steel. Find the centers by drawing diagonal lines carefully across the ends.

After centering, turn on the lathe to one half-inch diameter as shown, using care and judgment as this dimension is reached so as to prevent bending.

Lay out the five-eighth radius and form on the lathe by using the longitudinal and cross feeds simultaneously.

The holes are laid out after drilling by the use of the combination square and filed with a square file to fit standard taps or gauges.

Remove all sharp corners and finish the sides and ends by draw-filing. Wrenches of different sizes can be designed to fit other size taps.

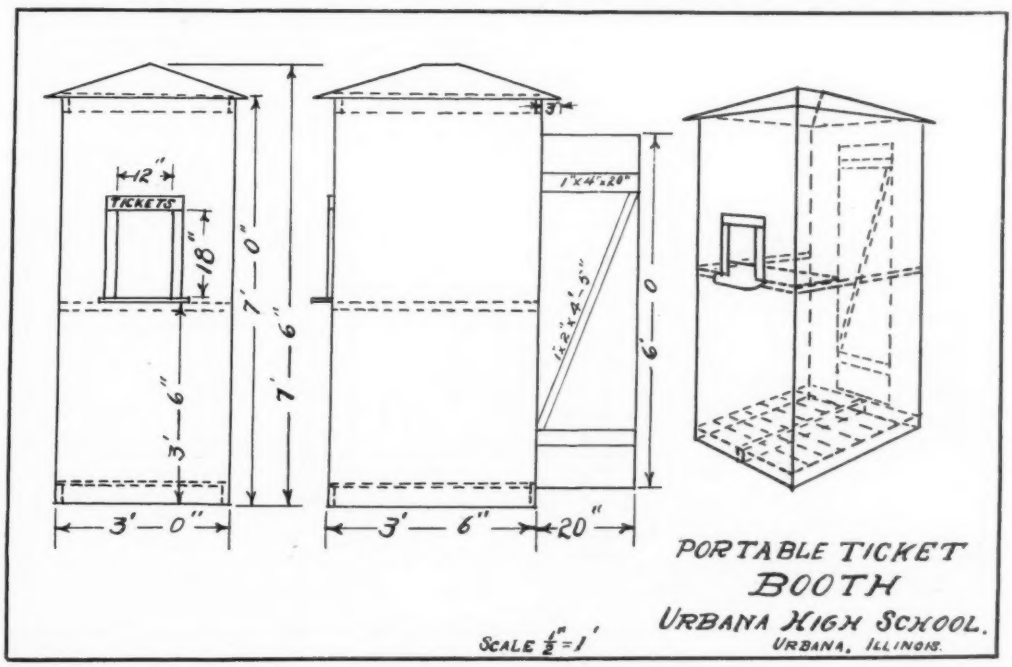
PORTABLE TICKET BOOTH

A. Q. Bennett, Urbana, Ill.

The portable ticket booth in the accompanying drawing was built by the manual training department as a project in carpentry. It is the outcome of a close study of the needs of a ticket booth that would take care of the athletic and social activities of the school. The booth can be used on the athletic field, at the entrance of the gymnasium and at the entrance of the auditorium. Since the booth is made for both inside and outside use the roof is removable. By removing the roof the appearance of the booth is much changed and the ticket agent gets better air and more light.

Construction of Booth

The only frame work of the booth consists of two frames made of 2"x4", one at the bottom and the other at the top. The sides are strengthened by a 2"x2" nailed to each board. This piece is 42" from the ground. The siding used was beaded ceiling. The ceiling was nailed on with No. 6 casing nails. The corners were made by



putting two ceiling boards together at right angles, the tongue and groove being removed from the joined edges.

The ticket window is 12"x18" with a three-inch casing on two sides and top. The word, "Tickets," was printed on head casing.

READY FOR BUSINESS.

The ticket shelf in front of the window is ¾"x6"x18". The shelf inside is 12" wide and rests on the horizontal 2"x2" that are nailed to the sides and front inside. The shelf should be sanded smooth and varnished to get best results when making change. The money drawer under shelf should be at least 3" deep, 18" wide and 10" long.

The door is made from beaded ceiling cut 6 feet long. The door is 20" wide, the width of six beaded ceiling boards. The door is hung on two 3" strap hinges. A hasp is placed inside the door to make the booth private.

The hip roof is supported by rafters cut from a 1⅛" board 2¼" wide. The sheeting is beaded ceiling smooth side up. The roof is covered with three-ply tar-paper.

RADIO PARLOR TABLE

Andres J. Faber, Haledon, N. J.

The "radio bug" is common in our school shops today and any project of use in the radio realm meets with the ready approval of many students.

The accompanying design combines a radio and library table and is a good project for advanced classes.

When a radio concert is desired, the table may be placed as shown in position A, the battery and "B" batteries arranged on the lower shelf. The radio set is fitted like a drawer so it can be removed for repairs when necessary.

When the radio is not in use the table might be turned as shown in position B, and the batteries covered with a wooden or metal casing. This gives a library table effect. A short drawer is fitted behind the radio set, which is possible, for in most cases the radio set is not as deep as a library table. Covering the batteries lessens the danger of a child experimenting to its sorrow and eliminates much worry on the part of the parents.

If a loud speaker is used on the table, it is possible to open the drawer, procure a pack of cards or "mah-jongg" set and indulge in a little pastime while being entertained. The operator in this case might be seated in a position to regulate the radio to eliminate, as far as possible, all needless noises.

The battery is sometimes placed in the cellar which would keep the lower shelf free.

The sizes of the table will depend, to a large extent, upon the kind and character of the radio set.

The material and finish are a matter of taste.

TETRAHEDRAL KITE

E. M. Wyatt, Casper, Wyo.

The tetrahedral kite has more possibilities as to variations than almost any other kite. It may be a single cell kite or a multiple one with four, sixteen, twenty or even more cells. Figure 1 shows a complete twenty-cell kite.

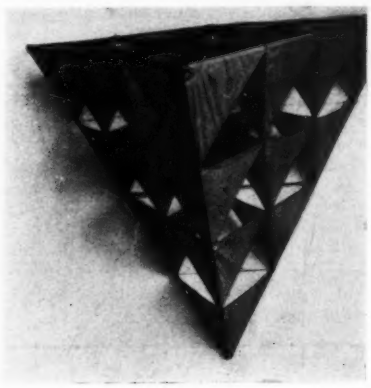
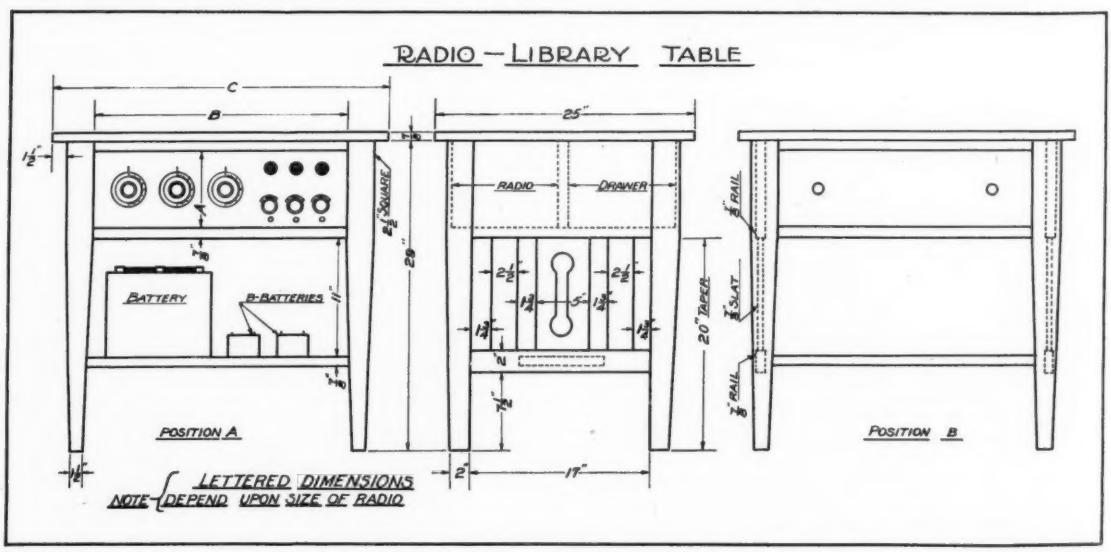


FIG. 1.



DETAILS OF A RADIO-LIBRARY TABLE.

The start of all of them is a frame of six equal length sticks. If it is to be a four cell kite, nine lighter cross sticks are added to subdivide it. If it is to be further subdivided it is usually best to use strings for division members. Figure 2 shows a skeleton of a twenty cell kite. If

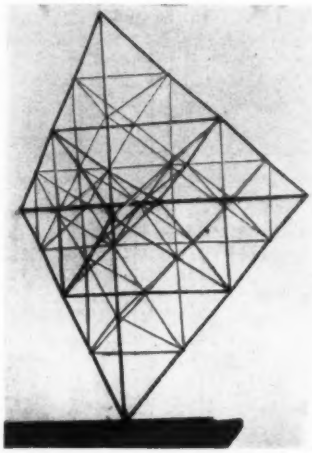


FIG. 2.

the strings were omitted it would make a four cell skeleton.

The bracing of a several celled kite is such that surprising small sticks can be used in its construction. Pieces ¼"x¼" white pine are large enough for a four or twenty cell kite 30" from corner to corner. The cross braces can be 3/16"x3/16". Figure 3 shows the corner construction and method of fastening. Cut and try with a knife is the most practical way of fitting the ends. Lashing with strong button hole thread and smearing the joint and lashing with glue will make a joint stronger than any other part of the kite.

Paper two sides of each cell with a light weight wrapping paper or pencil tracing paper. Use paste, not glue, in putting on the paper. Crease the paper to string members before pasting to prevent pulling out of line.

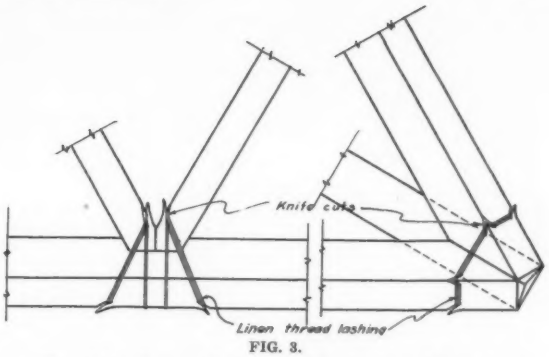


FIG. 3.

The kite flies without a tail. It is bridled at two points as shown in the pictures. It is not a light wind kite but can always be depended upon in a good breeze. It will always attract considerable attention.

A HOME MADE BLUEPRINT FRAME

Charles W. Frost, San Diego, Calif.

The "home made" blueprint frame shown in the drawing takes but little material to build, and fulfills all the requirements of such a piece of equipment as efficiently as the factory made article costing (without glass or felt) sixteen or eighteen dollars.

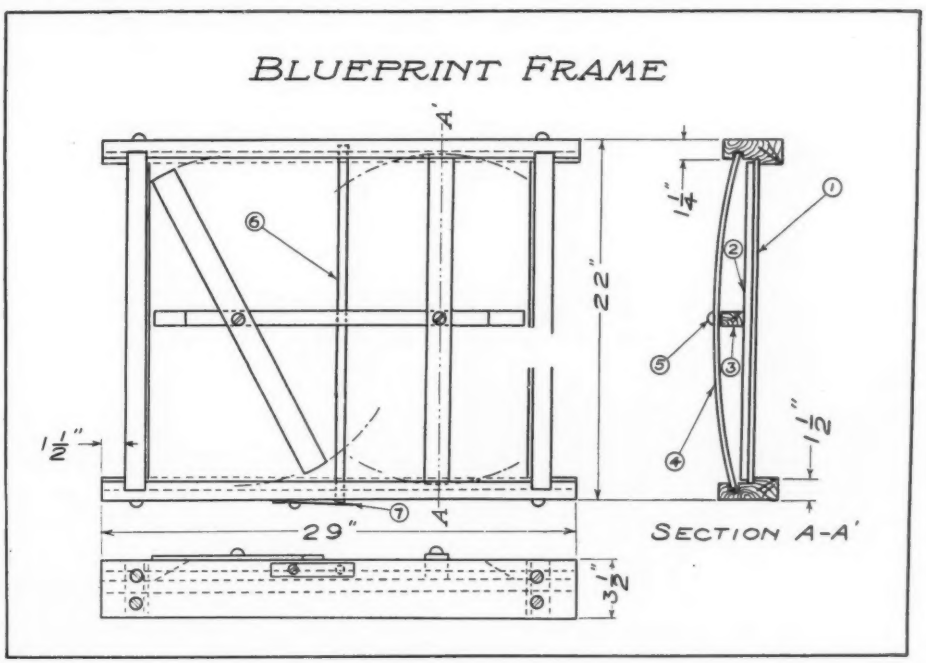
The drawing is self explanatory but it should be noted that the frame must be glued up without wind, to insure the ledge upon which the glass rests being absolutely level and true. If it is not, the pressure of the springs is likely to break the glass.

When *not* in use, the dowel rod, "6", holds frame, glass, and back together while permitting the springs to remain unflexed. The brass spring clip, "7", prevents the dowel falling out as the frame is handled.

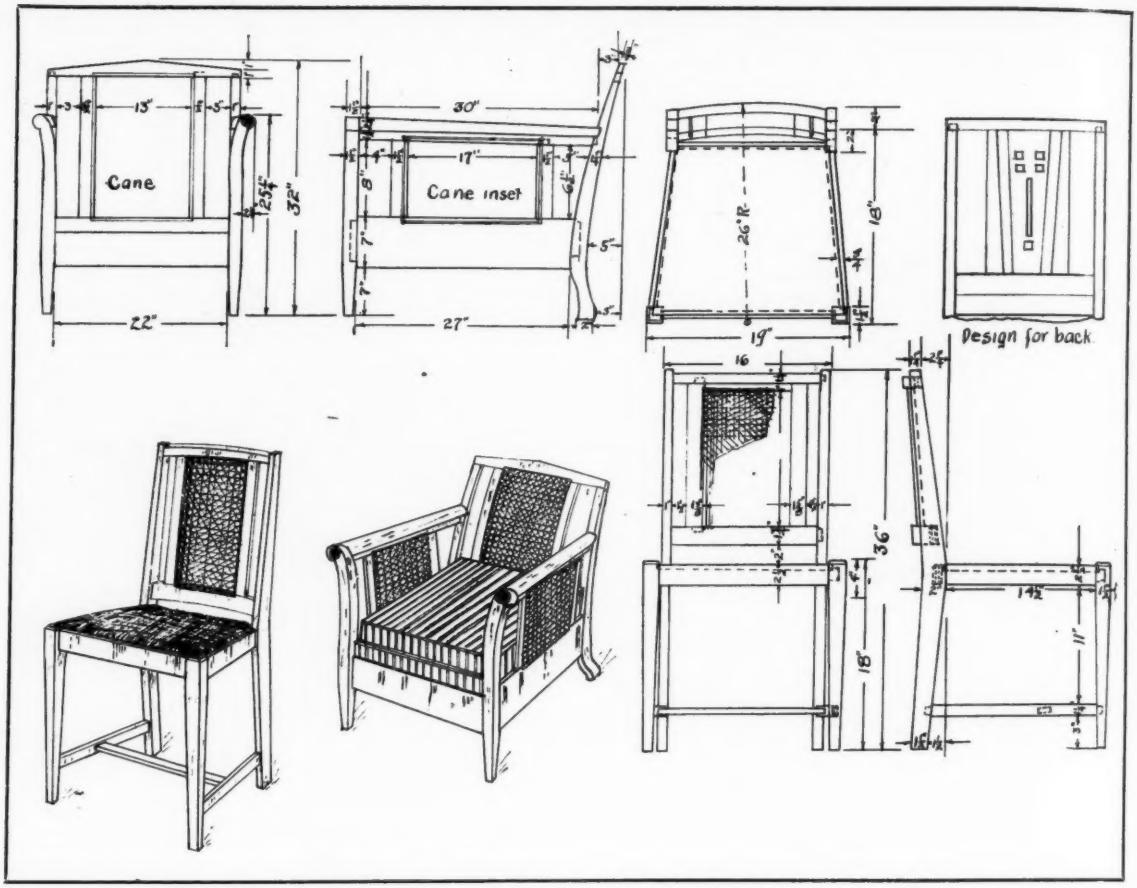
This rod is removed entirely when the frame is in use.

Names of Parts of Blueprint Frame

1. Glass.
2. Three-ply veneer panel back of frame.
3. Center brace.
4. Springs.
5. Pivot screws.
6. Dowel.
7. Spring clip.



DETAILS OF A BLUEPRINT FRAME.

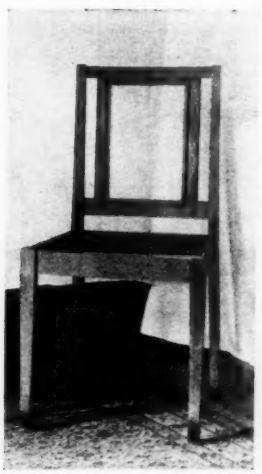


DETAILS OF LIVING ROOM AND DINING ROOM CHAIRS.

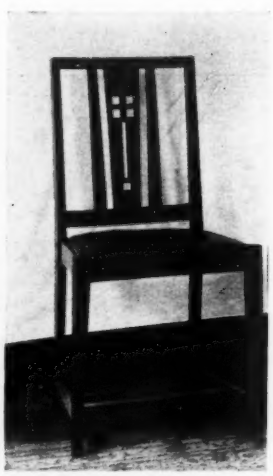
LIVING ROOM AND DINING ROOM CHAIRS.

William H. Mulvey, La Salle, Ill.

The method of developing the designs for the living room and dining room chairs in the accompanying drawing and photographs was fully described in a paper which appeared on pages 102-107 of the March, 1923, number of the Industrial-Arts Magazine.



CHAIR PARTLY ASSEMBLED.



DINING ROOM CHAIR MADE FROM ABOVE DRAWING.

TRADE TRAINING SCHOOLS GROWING

The wave which is sweeping the building trades in the trade school movement is continuing with more than ordinary momentum. Among the later developments may be enumerated the builders' exchange of Akron, Ohio, which has arranged with Superintendent Carroll R. Reed for the establishment of classes in bricklaying, house wiring, plumbing and sheet metal work. The contractors have provided some of the instructors and are encouraging the school while the union is refusing to do so.

At Oakland, California, F. R. Cauch, director of vocational training has established classes in sheet metal work and plumbing. Here the unions are cooperating with the schools.

The contracting carpenters of Portland, Maine, have established a vocational school in which carpentry and allied trades are taught. The Portland, Oregon, board of education has started night classes in bricklaying, plastering, carpentry and painting.

At Cincinnati John F. Arundel, director of vocational education, has established courses in carpentry, plumbing, sheet metal work, bricklaying and electrical wiring.

At Dallas, Texas, the Chamber of Commerce has appointed a committee to take charge of apprenticeship school. The sum of $500,000 has been raised for the purpose.

The evening schools at Louisville, Ky., under the direction of R. E. Daugherty, have introduced electrical wiring and bricklaying.

Director of vocational training, C. L. Jordan, at Waukegan, Ill., has inaugurated a complete day class for carpentry. Courses in electrical, sheet metal and concrete finishing work have also been started. In the part-time schools the beginnings of carpentry, bench work, electric wiring and concrete work are undertaken.

LECTURE WORK IN HIGH SCHOOL AUTO CLASSES

Bert Rolfe, Glendale, Calif., Union High School

Much has been spoken and written, with arguments for and against the advisability of giving straight lecture work in High School Auto Shop Classes. One of the chief objections is the impossibility of procuring a book in concise form so that an instructor can put over to the student the Theory of the automobile.

I faced the same difficulty at the beginning of my teaching career. Realizing, after active participation in the auto trades, both commercial and mechanical, how often I could have used a broader and more technical knowledge of fundamental principles as applied to the automobile, I determined to compile a text. After several years of hard work, I have completed a course, which is in loose-leaf form, data gathered from catalogs, personal experience, and extracts from some textbooks, the loose-leaf system making it easier to revise and add to, which I am doing continually. One might say, "Is it worth the effort?" I say, emphatically, "Yes!"

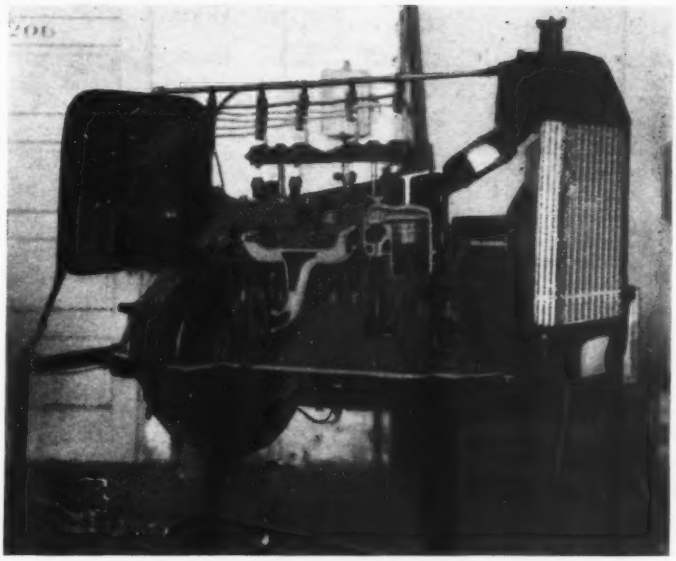
My classes may be divided as follows: First, the Own-a-Car boy; second, the student who will go to college; third, the boy who will undoubtedly have to work with his hands. The boy who owns a car, every day or two comes to you, and says, "Can I work on my car?" (If he is a modern typical boy, he will not say "please," or "may I"). You ask yourself the question, "Will what he wants to do, attain the objective you have in mind for him?" You look around your class and say, "Go ahead." His mind is on that sports roadster. Theory is the only definite work you can give him.

The college boy, usually a student, academic to his finger tips, has had no shop work. He knows nothing of the fundamentals of mechanics, not even getting his hands dirty. He will be a doctor, lawyer, dentist, etc. Theory is the only definite line that interests him.

The boy in industry, who will have to work with his hands is anxious to learn. Theory is good for him, but to keep alive his interest, tie up the theory with the practical wherever possible.

The following is a synopsis of my lecture work, which occupies one-fifth of the student's time. The first lecture is not on automotive work, but a real heart to heart talk, citizenship, discipline, cleanliness in habits, with special emphasis on clean talk and character building—just a real man to man talk. Then we take up a brief history of the horseless carriage, steam, automotive history, American and European, the inventor of the internal combustion engine, the pneumatic tire, etc., then gradually go into the fundamentals of the Otto four-cycle motor.

The boys have cross-sectioned a complete Ford power unit, including radiator, carburetor, fan, spark plugs—in fact every part can be visualized by the student. All is electrically connected and lighted up inside the unit. Also, we are fortunate to possess a lantern, whereby we are able to throw pictures on the screen. I have taken cuttings out of old textbooks and catalogs and pasted them on cards. As an example, take the Veedol handbook; eleven different oiling systems are given. It would be almost impossible to explain to the student, other than by lecture work, with the aid of a lantern. Likewise, timing gears, springs, brakes and clutches. These cards are filed away, and when I am taking up clutches, I have my data at hand. Of course, it is better, when lecturing, to have the actual parts, such as a cross-sectioned carburetor, etc. Safety first, and traffic signals, furnished by the safety council, all help so much in putting to the boy his responsibilities when driving a car.



AUTO ENGINE ARRANGED FOR LECTURE WORK.

In response to the question as to whether the boys are helped by the lecture form of instruction, I have found by tests, that they not only are better workmen, but better citizens because of this method, even though it means a great deal of additional work on the part of the instructor.

COVERING SHOP LIBRARY BOOKS

A. L. Whittemore, Rockland, Maine

Teachers of shop work are often annoyed by having books, which they have lent to students, come back badly soiled and worn. A simple device to prevent this is an envelope the size of the open book, one side made of card board or heavy wrapping paper, and the other of the stronger sort of waxed paper such as is used for wrapping sandwiches. The edges of the paper are turned over and fastened with an eyelet punch.

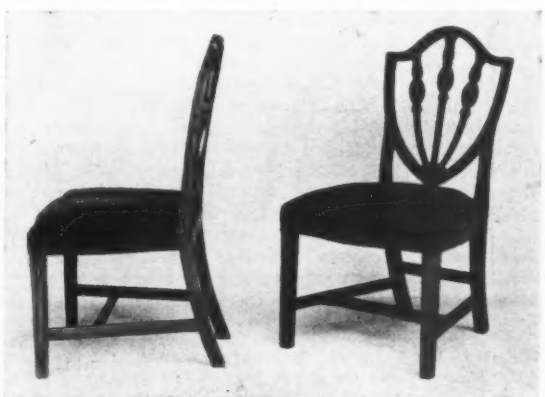
These envelopes are astonishingly durable and cost less than a cent each. The amount of wear and tear on valuable books saved by having pupils use them only inside this case is considerable.

If a still stronger envelope is desired tracing cloth may be used.

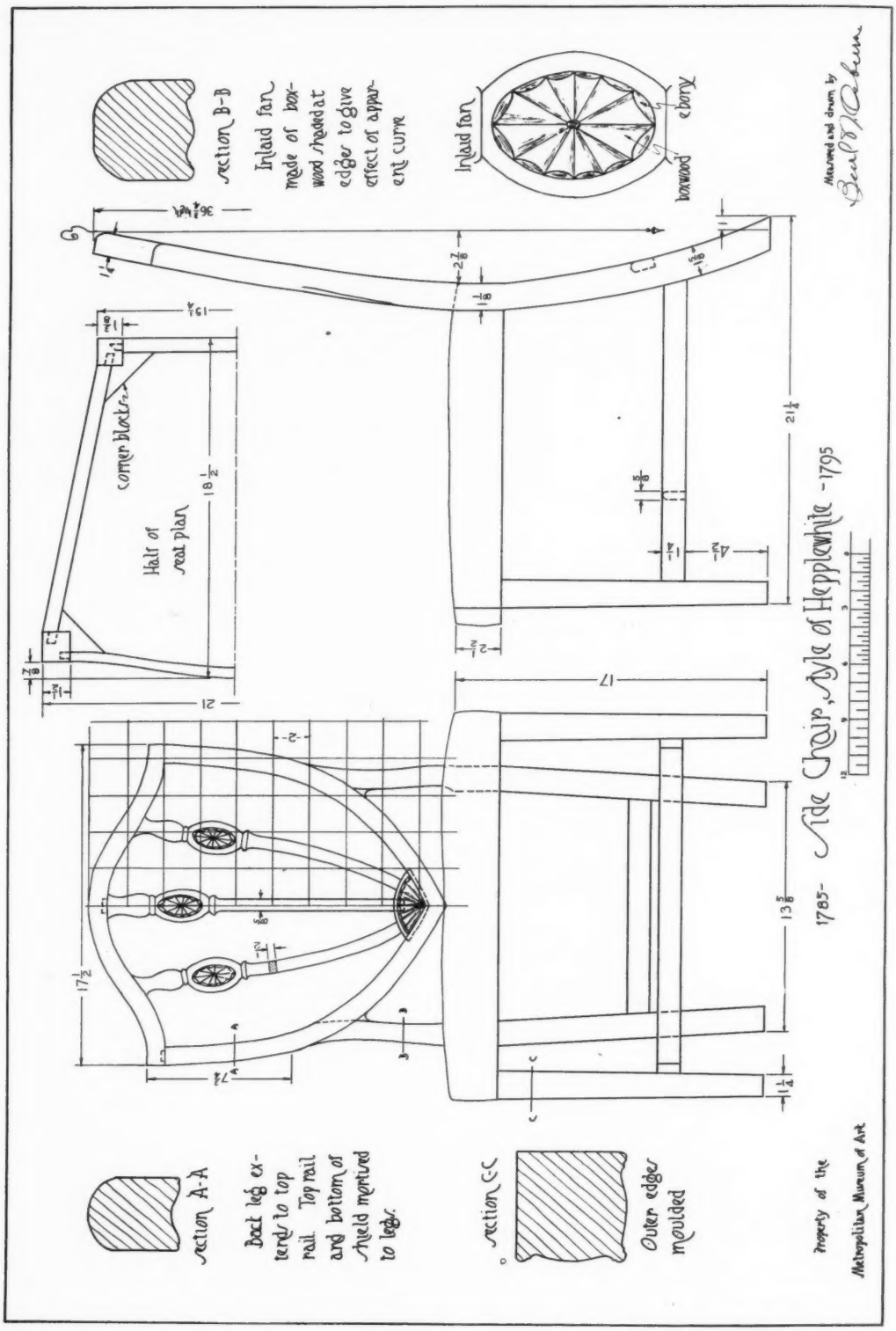
SHIELD-BACK CHAIR

Burl N. Osburn

This American-made chair in the manner of Hepplewhite is what was termed by him a "Bannister-back" because of the curved splats. The back is the characteristic shield shape, the parts of which are moulded on the front and rounded on the back. The front legs are tapered and



AMERICAN (1780-1795) HEPPLEWHITE CHAIR.


1785- Side Chair, Style of Hepplewhite -1795
Section B-B
Inlaid fan made of box-wood shaded at edges to give effect of apparent curve
Inlaid fan
ebony
boxwood
Half of seat plan
corner blocks
Section A-A
Back leg extends to top rail. Top rail and bottom of shield mortised to legs.
Section C-C
Outer edges moulded
Measured and drawn by
Property of the Metropolitan Museum of Art

are moulded on the outer two sides. The back legs run through to the top piece, forming above the seat the sides of the shield, while the lower part of the shield is formed of two pieces mortised to the legs. The inlay in the splats is given the "fan" shape and appearance by heating the edges of the veneer in hot sand until it reaches the proper shape.

If it is not found practical to mould the back and legs, their thickness and width should be reduced slightly to maintain their slim appearance.

Sheet and Art Metal Work

As it is Done in Strong Junior High School, Grand Rapids, Michigan

H. M. Dexter, Instructor.

AFTER beginners in my sheet metal classes have made a few of the simple articles mentioned in my former paper,[1] they usually feel confident that they are skilled enough to make any article in metal. But the proficiency of a boy who has made three or four articles of metal is limited and he must be guided in the choice of future problems. To insure good results, I suggest that a pair of salt-and-pepper shakers, made of nickel silver, is an attractive present for mother or for the "hope chest" of a grown up sister. This suggestion usually finds favor, and the class as a unit asks: How are they made?

To save explanations I immediately demonstrate to the class the way to draw a pattern for the project, which

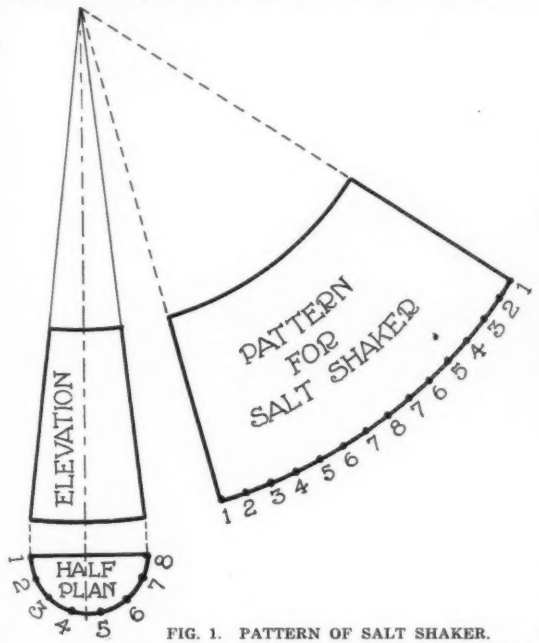


FIG. 1. PATTERN OF SALT SHAKER.

is the frustum of a cone (Fig. 1). When the pattern is finished we transfer it to a sheet of nickel silver, gauge No. 24 or 26. Two pieces of metal are cut like the pattern; next the two straight sides on each piece are filed to a bevel edge about 1/16" wide. With a small wood mallet, the pieces are bent to the shape of part of a cone, with the two straight edges overlapping to the width of the bevel. Care must be taken, while cutting, filing, and fitting the edges together, that hands and tools are very clean for, if these joints come in contact with any grease or soda before the brazing is done, the work will be a failure.

Now for the brazing. This is done in different ways according to the experience of the workman. For a beginner it seems best to use a high-fusing silver solder which is easy to handle. The only undesirable effect of this solder is the difference in color. If the finished article becomes tarnished, the seam will be detectable by a narrow yellowish line. This trouble can be remedied by making a silver solder which is exactly the same color as the metal to be brazed.

The brazing, or silver soldering, of the shaker is done as follows: After the seams have been fitted together tightly, cut a strip of silver solder about 1/16" wide and a bit shorter than the length of the shaker. Dip the article in clean water and immediately cover the seam on the outer side with powdered borax. Next put the strip

[1]June, 1923. p. 236.

PROBLEMS MADE IN THE AUTHOR'S CLASS. THE SALT SHAKERS DESCRIBED ARE AT LOWER LEFT HAND AND RIGHT HAND CORNERS.

of solder in the inside of the shaker on the seam and cover with borax. Now take hold with round nosed tongs on the part opposite the seam, and, with the seam downward, place horizontally over a gas blowpipe or plumber's blowtorch, until the metal is red hot and the silver solder is melted and running evenly over the seam. When this is done, remove from the flame and hold it in the same position until it has partially cooled (otherwise the solder will run to the low point.) Then drop in clean, cold water dry, and examine the joint.

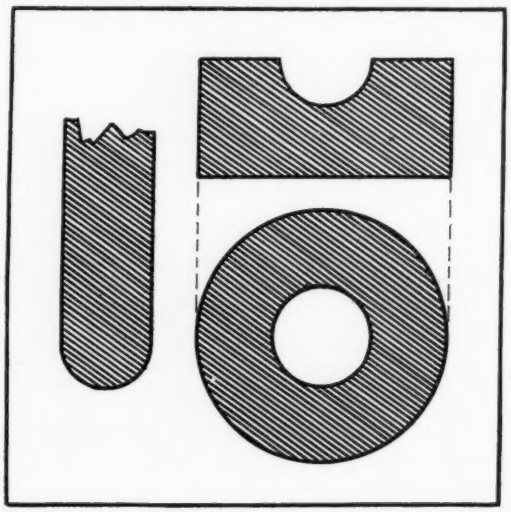
Next round out the shaker with a wooden mallet over a cone shaped horn. This rounding out will help to remove the burned borax. The seam should be filed smooth with a *fine* file or scraper.

When smooth, clean the piece by soaking it for a while in a luke warm solution of seven parts muriatic acid and three parts water. Use a copper dish made without the use of solder of any kind. Another good cleaning medium consists of a strong solution of common salt and water with a little sulphuric acid. This should be used in an earthenware crock. Examine the piece in the cleaning solution every ten minutes by rubbing it with the fingers. As soon as the brown color is coming off remove the shaker from the bath, rinse with *cold* water, and scrub with sand on both inside and outside until bright. Rinse again and dry with sawdust.

The shaker is now ready for hammer finishing, which is done on a cone shaped horn with a two or three ounce ball pein hammer. This pein must be free from scratches and bright. Care should be taken to hammer in lines around the surface, beginning at the top. Leave about 1/8" at the top unhammered so that it will be easier to attach the top. Hammer the whole shaker lightly all over, and be careful not to hammer hard at the bottom edge. It is essential that all shakers belonging to a set be hammered

with equal force so that no one shaker is larger than the others. After the surface hammering, the piece is rounded and the top and bottom edges are filed straight.

The next step is to make the tops. To do this we must make a few special tools (Fig. 2). These are made as follows: Take a piece of round tool steel, about 1/16" larger than the diameter of the shaker at the top and about 6" long (Fig. 2a). Grind one end to a ball shape and temper to medium hardness. This will be used as a punch. Next take a piece of softer steel, about 1½" diameter (Fig. 3) and 1" long. In the center drill a hole



FIGS. 2 AND 3.

about the diameter of the salt shaker top and about ¼" deep. Heat this piece red hot, and place it on an anvil with hole upward and drive the round end of the first piece (Fig. 2) into the hole deep enough to form a clean round impression like a half ball. After this is done, file up the top of the block straight and scrape out the edge of the hole so that it will not be sharp. Now take the punch (Fig. 2) and grind the round end so that, when it is in the hole in the block (Fig. 3), there will be about 1/16" space all around. This space is left to receive the thickness of the silver.

To make the top to the shaker, cut a piece of nickel silver, gauge No. 24 or 26, about 1½" square. Set this on the block and with a fair sized hammer drive the punch down until the silver sinks to the bottom of the hole. The waste silver around the cap should be cut off and the edges of the cap filed off to make the cap fairly round. Before proceeding, set the top of the shaker into the cap and note that the top is a trifle larger (Fig. 4). The edge which overlaps is necessary to fasten the cap to the shaker.

Another simple tool is necessary for this operation (Fig. 5). This tool is a piece of round tool steel, with a groove near one end. It is fastened in a vise, with the finish end up, and is used in bending or drawing in the edge of cap so that it will fit tightly in place. The drawing in is done with a little steel hammer.

The soldering on of the salt shaker top is a very simple job and the boys become proficient after they have been given a demonstration of this kind of soldering. This work is done as follows: Drop into each salt shaker a piece of solder the size of two wheat grains. Add five or six drops of soldering flux (preferably made of muriatic acid and oil of glycerine, half and half). Turn the shaker on its side and, holding it with a pair of tongs over a low flame, keep on turning it until a bright silver-like line appears around the edge of the top. When this is noticed remove from the flame but keep on turning until the solder has cooled sufficiently so that it will not run. Then drop the piece into a dish of clean water. Care must be taken that the piece is not overheated. If this occurred the bright line just mentioned would not be seen.

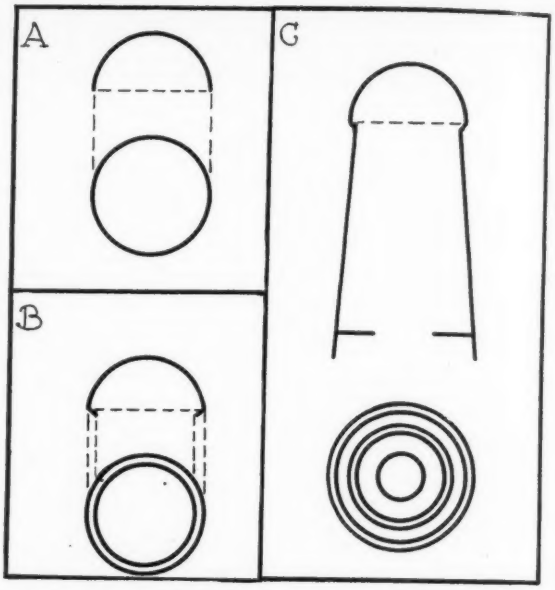


FIG. 4. A—THE TOP FORMED. B—TOP WITH EDGE FORMED. C—COMPLETE DETAILS OF THE SALT SHAKER.

The work may now be washed carefully in clean water so that no traces of the flux are left.

The next process is the drilling of the holes in the tops. This is done with a small hand drill. To facilitate the work we take a piece of wood and shape it to fit the inside of the shaker. Place the rough end of this piece in the vise and on the shaped end place the shaker. Now it will be possible to drill the holes without breaking the drills. Attention should be called to the fact that, if the drill sticks out of the chuck too far, there will be danger of breaking the point. Let the drill stick out of the chuck only as far as is absolutely necessary to drill the thin metal.

The last piece to be made for the shaker is the bottom. This is made of a little heavier metal than the rest of the shaker. The shape is like a plain washer with a 5/16" hole in the center. The bottom is made to fit tight on the inside of the bottom part of the salt shaker, about 3/16" above the lower edge. The bottom is set straight in place and soldering flux is applied all around at the edges of bottom and side of shaker. A bit of fine solder is added, and the whole is heated over a low flame until the solder

FIG. 5. TOOL FOR FORMING EDGE OF THE SHAKER TOP.

runs freely. Keep turning continually and remove from the flame. When the solder becomes hard, drop in water. Hot water is preferable as it will remove the soldering flux which may be present in the inside. After washing dry thoroughly.

The bottom edge will possibly need to be smoothed up with sand paper, after which the shaker is ready for the polishing. This can be done on a buffing lathe if one is at hand; or the work can be done with a cloth and a good metal polish.

These salt shakers are appreciated in every home. My classes from grade six and upward have made them with good results. Adults in evening classes are just as enthusiastic in making a half dozen salt-and-pepper shakers as are any sixth grade boys.

Although we make salt shakers of many different shapes and sizes, I have found this style best and easiest as an elementary project. It is nearly an ideal exercise in teaching pattern drafting, brazing, hammering, soft soldering, polishing and possibly buffing.

PART-TIME SCHOOLS IN FACTORIES IN NEW YORK STATE

A study recently made by Mr. Oakley Furney, of the Division of Vocational and Extension Education of the New York State Department of Education, indicates that considerable progress is being made in the state in developing part-time instruction in factories for children of continuation school age. The progress involves not only an increase in the number of establishments which offer instruction, but also relates to the improvement in the training of the teachers and understanding of the type and method of instruction. Mr. Furney briefly summarizes the plans of several firms:

"Employers of children of part-time school age in so far as they have been approached have willingly cooperated with the local school authorities and the State Education Department in the establishment of training departments and apprentice classes. The following taken from a little bulletin entitled "Apprentice Training Course" put out by the Onondaga Pottery Company of Syracuse, N. Y., outlines what one company offers to boys of continuation school age:

" 'The Onondaga Pottery Company offers to a limited number of worthwhile boys and young men the opportunity to learn the art of making pottery in its clay Shop. Any boy between the ages of 15 and 19 may apply.

" 'If you apply and are accepted, you will be enrolled in an Elementary Training Course for Apprentices. During the week you will be given apprentice work at standard wages and on Saturday mornings special training in the art of making pottery will be given by skilled instructors.

" 'You will be paid for the time spent on Saturday morning in this Apprentice Course and, if you are under 17 and take this course, you will not have to attend the usual Continuation School. The Department of Education considers this course as equivalent to Continuation School.

" 'In addition to your regular pay for the week's work, a reward of $1.50 a week will be given if your work is satisfactory in the Apprentice Course. You will be graded on the quality of your work and at the end of the course, which lasts 24 weeks, a price will be given amounting to from $10.00 to $15.00 depending on the average grade which you have received.

" 'Therefore, if you make good, you will receive a total money reward of not less than $46.00 in addition to your weekly pay.

" 'Besides these money rewards, you will be awarded a diploma signed by an officer of the Onondaga Pottery Company on completion of the course. On this diploma will be stated the grade which you have won.

" 'If you wish to take advantage of this opportunity, you and the Onondaga Pottery Company will sign an agreement in which the Pottery promises to give you the desired training and you promise to remain in the Apprentice Course for 24 weeks, for you can not learn all that will be taught in less time than that. The agreement allows you, however, to leave the course at the end of the first 12 weeks, if you wish, without breaking your promise. The Company knows that this agreement is not legally binding on you because you are under 21, but the Company does not care to bind you legally. You give us your word of honor to do your part and we give you ours. If you are willing to break your word, the sooner we know it the better for, in that case, there is no place for you in our Pottery family.

" 'This Apprentice Course which the Onondaga Pottery Company is offering you has the approval of the State Department of Education through the Division of Vocational and Extension Education and is conducted under its supervision.

" 'Here is an opportunity for you to become a skilled man and to make good in life. There is a good job, a prize of at least $46.00, and a diploma from the Onondaga Pottery Company waiting for you, if you have the stuff in you which makes successful men. Apply to Mr. Olmstead at 1858 West Fayette street, the old plant. He will gladly explain the course in more detail.—**The Onondaga Pottery Co.**'

"The Onondaga Pottery Company is so well satisfied with their training plan for boys that they contemplate a special program for girls.

"On May 21, 1923, the Division of Vocational and Extension Education of the State Education Department approved of the plan of the Bethlehem Steel Company of Lackawanna, N. Y., for a private part-time school for the school year 1923-24. This plan shows the following features:

"1. Courses—Industrial Extension Courses for boys employed as apprentices in (a) machine shop work, (b) pattern making, (c) electrical work.

"2. Rooms for exclusive use of part-time classes—(a) one room for drafting and design, (b) one room for general and required subjects.

"3. Teacher—Edwin C. Eller, teacher of related mathematics, related drawing, general and required subjects. He devotes 24 clock hours per week to teaching and 20 hours per week to follow-up work and records. He is a graduate of the Rensselaer Polytechnic Institute in mechanical engineering and has had practical experience.

"4. Sessions—The classes are in session on Monday, Tuesday, Thursday and Friday for four clock hours each day.

"5. Number of children—While it is contemplated that a total of 100 boys will be registered in these courses the registration at the date of approval was:

	Boys
16 years old	40
17 years old	30
Total	70

"6. Attendance—The Company requires for all apprentices to attend four hours per week unless excused for sickness and agrees to terminate employment in cases of irregular attendance.

"7. Admission—To be admitted to the apprentice course a boy must be a graduate of an elementary school, or equivalent, except in special cases.

"The Van Raalte Silk Company of North Tonawanda has established a training course for silk glove makers, and has a well planned program to take care of the needs of boys and girls of continuation school age. The practical work is taught by experienced workers who took a short teacher training course given by the State Education Department. The general subjects are taught by teachers sent to the plant by the local board of education.

"The Dutchess Manufacturing Company of Poughkeepsie, N. Y., has had a training department for makers for several years. It now plans to start an apprentice course for cutters, and to organize all of this work to meet the state continuation school requirements.

"The apprentice department of the General Electric Company of Schnectady has been approved as a private part-time school and conducts courses which satisfy the state requirements as to continuation school education.

"Other concerns which have manifested an interest in the establishment of training departments or plant part-time schools are: The Otis Elevator Co., Yonkers; The Rudolph Wurlitzer Co., North Tonawanda; M. Wile & Son, Buffalo; The Layman-Berkwitz Co., Newburgh; G. W. Van Slyke & Horton Co., Kingston."

KANSAS VOCATIONAL EDUCATION CONFERENCES

As an aid to the uniform development of vocational education to meet the needs of the largest number of workers, a series of vocational conferences will be held at Manhattan and Pittsburg, Kansas, for the benefit of educators, tradesmen, employers of trade workers, farmers and home makers.

The teachers of vocational agriculture will hold a conference at the State Agricultural College, at Manhattan, June 6th and 7th. The program is in charge of Mr. L. B. Pollom, state supervisor of vocational agriculture.

Also, on the 6th and 7th of June, there will be a conference on vocational home making at the Agricultural College. Vocational home making teachers of the college will cooperate with the state vocational board in making the program.

The second annual trade and industrial conference will be held at the State Teachers' College, at Pittsburg, from June 9th to 12th inclusive. At this conference, the College will cooperate with the state vocational board in adapting the program to those interested in trade and industrial subjects.

Among those who will take part in the program will be Dr. A. K. Getman, supervisor of vocational agriculture of New York State; Dr. Charles A. Prosser of Dunwoody Institute, Minneapolis; Mr. L. S. Hawkins, director of the educational department of the United Typothetae, Chicago; Miss Edna White, of Detroit, Mich.; Dr. Florence B. Sherbon, director of the Kansas Bureau of Child Research, University of Kansas, and Dr. Margaret Justin, of the Division of Home Economics, of the Kansas State Agricultural College, Manhattan.

PROFESSOR GRIFFITH PASSES

Prof. Ira S. Griffith, head of the Department of Industrial Education and Applied Arts at the University of Wisconsin, passed away on April 30th, in the Methodist Hospital at Madison, Wis. Mr. Griffith was 50 years of age.

Professor Griffith who was widely known throughout the United States through his books, was born at Houlton, Kans., in 1874 and was according to his own statement, a carpenter and builder by trade. He graduated from Eureka College with the degree of A. B. in 1896 and did work in the post-graduate student education departments of the University of Chicago, Bradley Polytechnic Institute, and Lewis Institute.

Professor Griffith's first professional work was at Oak Park, Ill., where he held the position of manual training instructor in the high school. Later he taught mathematics at Eureka College and was professor of manual arts successively at Bradley Polytechnic Institute and at the University of Missouri.

In 1919 he resigned from Missouri to become head of the Department of Vocational Education at the University of Illinois. He held this office one year and resigned to become head of the Department of Industrial Education and Applied Arts at the University of Wisconsin.

Professor Griffith's largest contribution to the cause of practical education was his series of books on wood working and carpentry. The list includes six or seven books which are widely used for text and reference purposes. He was active in the Western Arts Association and held several offices, including the presidency of the organization. He was frequently called upon for addresses before state and local gatherings of manual training men.

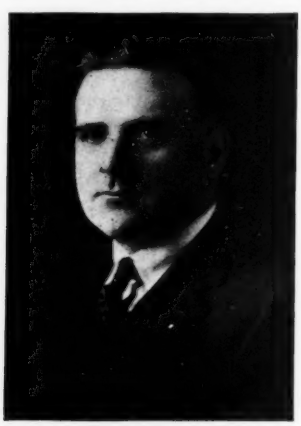
Mr. Griffith is survived by a widow and two daughters.

MAINE STATE DIRECTOR OF VOCATIONAL EDUCATION RESIGNS

Will become head of Vocational Education Department of the Wall Paper Manufacturers' Association of the United States.

E. K. Jenkins, who has been State Director of Vocational Education for the State of Maine for four years, has resigned to take a similar position with the Wall Paper Manufacturers' Association of the United States.

In his new work, Mr. Jenkins will come into close contact with the vocational directors and teachers of the country. Efforts will be made to assist in organizing trade extension and trade preparatory classes for paper



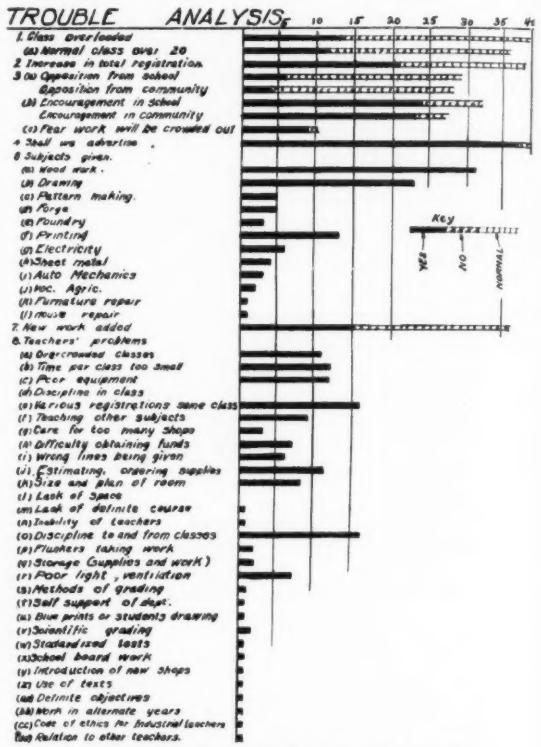
E. K. JENKINS,
Rumford, Maine.

hangers. A study of ways to cooperate with home-furnishing teachers will be made. Already skilled workers are working on material which will be of value to home economics teachers along these lines. This material will be distributed free through the vocational division of the wall Paper Manufacturers' Association.

Mr. Jenkins received the degree of B. S. from the University of New Hampshire, specializing in mechanic arts courses. Since his graduation he has taught or served as director of manual and industrial arts in Bangor and Brewer, Maine, and as State Director of Vocational Education of Maine. Mr. Jenkins has expressed appreciation for his valuable experience gained in working under Augustus O. Thomas, Commissioner of Education of Maine and of the cooperation of Educational and Industrial workers in Maine. In turn, Maine men and women in the vocational work realize the loss sustained in Mr. Jenkin's departure from the state but congratulate him on his new position.—H. G. Noyes.

Iowa Round Table. The Manual Training Round Table of the Northwestern Iowa Teachers' Association was held March 28th at Sioux City, Ia. The meeting which was in charge of Mr. Wm. Baker of the high school print shop, was one of the most enjoyable held in the district.

The afternoon session was devoted to a discussion of questions resulting from a survey of forty schools in or near this district. The results of the survey were charted and presented to the meeting in blue print form. At the



ANALYSIS OF PROBLEMS IN 40 IOWA MANUAL TRAINING SCHOOLS.

close of the afternoon session, the visiting teachers were entertained at dinner by the Sioux City industrial teachers. The menu cards at this dinner were made from thin wood cut by boys in the shape of a Sioux Indian head, fastened together with lock washers, and printed in the school shop.

Following the meal, four interesting and helpful talks were given as follows: "The Manual Training Teacher and the White Collar," Mr. M. G. Clark, superintendent of schools, Sioux City; "Lumber Specifications, Care and Grading," Mr. Fred Hutchins, vice-president, Curtis Sash and Door Company; "Shall I Go Back," Mr. Burl N. Osburn, Sioux City; "Status of Manual Training in Iowa," Mr. Harvey L. Freeland, state board ofeducation, Des Moines. —L. H. Wood.

Accident Insurance for Pupils and Teachers. The mechanics arts school of Concord, N. H., is said to be the only school in the United States where the pupils and teachers are insured against accident. The board of education has secured a blanket policy from a reputable accident insurance company.

By the terms of this policy, which cost the city $185.28 a year, payments in case of accident to a pupil or teacher while in the school may be made up to a total of $10,000 in the case of any two accidents, or $5,000 for one accident, but not more than $10,000 in any one year. This policy also covers liability for any injuries to the public from any machinery or other accident caused by a defect in the building, while within the school building.

CONFERENCE ON AFFILIATION OF VOCATIONAL EDUCATION ASSOCIATIONS

At a conference of representatives of the National Society for Vocational Education, the National Vocational Guidance Association, the American Home Economics Association, and the Vocational Education Association of the Middle West, the subject of greater cooperation of all associations dealing with vocational education was discussed. The conference appointed a committee to formulate and present a statement for submission to the various organizations interested. The committee which consisted of L. H. Dennis, Lewis Gustafson, Dr. Alice F. Blood, Dr. John M. Brewer, and Mr. Leonard W. Wahlstrom, presented a statement of conclusions for the benefit of the organizations represented. The statement in part provides:

I. Name. The name of this body shall be The Council for Vocational Education.

II. Purpose. The purpose of this council shall be:

1. To furnish a means whereby the various societies engaged in vocational education and allied activities may cooperate with each other.

2. To provide a clearing house for exchange of ideas and the development of the activities of these organizations.

3. To furnish an opportunity to present a united front in furtherance of the aims of these associations.

4. To furnish a means for closer association with the N. E. A.

5. To study the possibility of a still closer affiliation among these associations.

III. Membership. The membership shall consist of representatives of the National Society for Vocational Education. The National Vocational Guidance Association, the American Home Economics Association and the Vocational Education Association of the Middle West, and such other organizations as may be added by the action of the council.

Each association shall be represented in the council by three (3) members, to be chosen preferably by the executive committee or the corresponding body of each organization. Representatives to the council should be selected for a term of three (3) years, except that at the first election the term of office of the representatives shall be one, two and three years respectively.

IV. Meetings. There shall be one annual meeting of the Council, this to be held at the time and place of the winter meeting of the Department of Superintendence of the N. E. A. The Council may arrange for additional meetings at its discretion.

The committee requests that in the event the plan is not approved in all details, that the said organization shall appoint three delegates to the first meeting to be held at Washington, in the hope that a satisfactory agreement may be reached by the delegates.

ANNUAL DINNER OF THE SCHOOL CRAFTS CLUB

The annual banquet of the School Crafts Club of New York City was held on Saturday, May 3, at Geneva Retaurant, in West 44th St. The club turned strong for its final meeting before the summer vacation. The program, which followed the excellent meal, was of a highly social and inspirational nature as shown by the following:

Program

1. Music by Messrs. Beyer, Kennington, Schantz, and the gang.

2. A talk demonstrating digital dexterity as an asset to teachers of Manual Training. John Mulholland, Horace Mann School.

3. The Development of the Boy in a Summer Camp. Ernest W. Tuttle, Supervisor of Manual Training, East Orange, N. J.

Mr. Otto Schantz, a member of the School Crafts Club and of the Metropolitan Opera House chorus, sang in a rich baritone voice, "Invictus" by Bruno Huhn and "Because" by D'Hardelot.

Mr. Mulholland led off his remarks by the story of a man visiting an insane asylum. He said to a man riding a saw horse, "That is a fine steed you are riding." The patient answered, "This is not a steed, it is a hobby." The visitor wanted to know the difference and received this reply, "You can get off a steed, but with a hobby you stay right on."

Mr. Mulholland found himself talking in terms of his hobby that interest among boys begets good discipline. He has found that you have their interest if you can keep them guessing as to what is coming next.

Boys like to have work made easy for them. A good plan to follow is to make them believe that some things are easier to do than they may be. He demonstrates old hard methods and then shows them surprising short cut methods.

Mr. Mulholland's hobby is theatricals. There is a joshing expression among this class of people "May all your children be acrobats." Acrobatics is considered the lowest phase of theatrical work. The stunts look hard to the audience and are not nearly as interesting as other means of amusement. When Mr. Mulholland wants to demonstrate a band saw he cuts out the initials of some boy in the class, or the school initials. This is to interest the boy in the machine. Sometimes in demonstrating how easy it is to cut tin with snips he cuts a silhouette of the class. He has them guessing about what he is doing.

Mr. Mulholland entertained the club members with a dozen coin, handkerchief, and card sleight of hand tricks. We declare him to be "good." He maintains that the things that a magician knows would help manual training teachers. When a teacher sets out to give a demonstration he admits that he is "good," but often there is a question on the part of the class as to whether he is or not. The teacher must convince the boys that he is "good."

Mr. Arthur Hopper outlined the program to be carried out in the coming Eastern Arts Convention at Atlantic City, and urged the club members to attend. The School Crafts Club will hold a "get together" on Friday evening after the regular sessions.

Mr. Richard Beyer, supervisor of manual training in Hoboken, N. J., rendered the following violin selections: "Minuet No. 2 in G" by Beethoven; "Berceuse" by Hoffman; and "Gavotte" by F. J. Gossec and arranged by Mischa Elman.

Mr. Ernest W. Tuttle spoke in substance as follows:

Thirty-five years ago Dr. Henderson of Harvard University, conceived the idea that an unorganized summer vacation is detrimental to the boy, physically, mentally and socially. He observed that upon returning to school in the fall, the general condition of the boy was somewhat below that of leaving in June. A condition of tired out physique was clearly registered. The activities of the mind were sluggish, and in many cases a grouchy disposition had developed. These facts encouraged the doctor to set upon the search for a remedy. He despised summer schools and constantly discouraged them whenever possible. He loved the out-of-doors and was a naturalist of wide reputation. His own experiences in the mountains during vacation had proven to him beyond any possible doubt that organization in recreation was the keynote of development, hence, after summing up the various tests and researches, he decided upon an experiment of his own originality, a "Summer Camp." (If I have not been misinformed, he was the pioneer of boy's camps in New England, if not in the United States.)

His camp was organized to provide a wholesome experience for boys who have been confined in the schoolroom for a large part of the year. The opportunity of living in the open air, with proper associates, with healthful surroundings, with regular hours, with regular duties and games in the right proportion, with plenty of wholesome food, and with personal attention given special needs, appeals to boys and parents alike.

Nature demands that our boys have a chance to "Kick-out." Every boy wants to do something for himself. He wants to strive with others. He wants to be strong. He must if he is to be an effective and useful citizen.

A conventional summer resort does not provide for the kind of training so much desired by the boys and so essential for their future success. The touring party does not furnish it. The camp will supplement the home training, giving the youth a sound body, the real foundation for happiness and useful citizenship.

"Where can we ever hope to teach more effectively the following truths than in a summer camp. The value of time, the success of perseverance, the pleasure of working, the dignity of simplicity, the worth of character, the power of kindness, the influence of example, the obligation of duty, the joy of originating, the wisdom of economy, the virtue of patience, the improvement of talent and the worth of organization.

"Time and space will not permit me to outline all of the above truths but with your permission I shall select what seems most important in the development of a boy in a summer camp, namely, 'The success of perseverance and the influence of example.' The former might well be adopted for the boy and the latter for his leader. 'We are no better than the books we read,' nor are we better than the examples we set. In fact the camp can be no better than the personnel of its masters. Nowhere in my judgment can we live a greater sermon, than in the performance of our every-day duties in summer camp.

"Probably there is no greater need in our youth of today than being forced to 'hoe to the end of the row.' The success of perseverance.

"From the first reveille to the final taps our aims must be a constant checking-up and examination of our own performances as an example, and the friendly persistance of improvement in our boys.

"Well organized bulletins can furnish sequence and variety of activities, but we must instill in the boys with wholesome play, a desire to, 'hoe to the end of the row.'

"Fair play or a square deal, must be our watchword.

"Boys can be divided into two classes, good and bad, and since our aim is to help the good boy to help himself, let us use care in the selection of campers, but through misjudgment or some other how a bad boy enters our shrine let us not surround him as a menace, nor label him bad, but instead make him a friend and keep him always with something to do.

"There is no scale or measure whereby we can satisfy ourselves of a boy's development, but we can rest assured that a constant exposure of good will eventually leave traces of permanency. We have been told by our good friend Ralph Waldo Emerson, 'Not to be simply good but good for something.'

"Life and action, something for the present as well as the future is what the boy likes. He loves law and order if equally distributed. He feels keenly the sense of ownership and cherishes its protection. Only a few years are between the boy and his leader. We are only older boys, our ways should be their ways plus the experience of a few years.

"I have long been thinking of a method of rating or ranking the actual accomplishments made by the boy in camp. I have not yet arrived at a satisfactory conclusion, but hope to before this summer is over."

Mr. Edwin F. Judd, President of the School Crafts Club, has found that the duties of a shop teacher in a large boys' camp are very pleasant. Mr. Judd appointed the following committee to nominate the officers of the club for the coming year: Mr. Philip Wagner, Dr. Ernest B. Kent and Mr. Arthur W. Richards.

Mr. Judd informed the club of the death of an active member, Mr. George A. Dobbelaar, 175 Central Avenue, Leonia, N. J. He asked Mr. Samuel Tanenbaum to say a few words about Mr. Dobbelaar. It seems that death overtook the chairman of our membership committee very suddenly. He had been at school on the morning of the day that he succumbed to an attack of acute indigestion. He was very popular with the boys in his classes and was known as a hard worker. He leaves a wife and family.

A note of thanks was extended to Mr. Frank A. Baker for the printing of a booklet containing a new list of members with by-laws for individual distribution. This was printed by Mr. Baker's classes.

—Lloyd F. Stair.

Mr. Emil F. Kronquist, instructor of manual arts at the Washington High School, Milwaukee, has resigned to become chief designer for the Mow-Bridges Co., manufacturers of lighting fixtures. Mr. Kronquist is widely known as a craftsman and co-author of the Berg & Kronquist Mechanical Drawing books.

NOW ARE THERE ANY QUESTIONS?

A Mahogany Finish

Q. 465. I have made a solid mahogany davenport table and am having trouble now in staining it so that the beautiful grain will not be spoiled. I have experimented with water stains and spirit stains but failed to get the desired results. The dark stain left some of the grain nearly black and when diluted it left a pinkish or undesirable red effect. A stain that will leave a reddish brown tone is the one that will please me most.—H. C. R.

A. The mahogany davenport table should be washed with denatured alcohol to remove the shellac; if necessary a second washing should be given. It should be allowed to dry thoroughly and afterwards resanded thoroughly to a bright, new wood, using worn-out sandpaper and a hard felt block. The piece should then receive a full coat of mahogany water stain. It may be necessary to give a second coat of stain after the first is dry depending upon the depth of tone desired. In this respect it is suggested that two sample pieces be given a single coat of stain and a double coat of stain.

A sizing coat of diluted orange shellac, made water thin with denatured alcohol, should then be carefully brushed on the wood. A three-hour drying in a warm room should be allowed. Sand lightly but smooth with a 6-0 paper, avoiding cutting through any edges. Prepare a match shade or darker from Silex filler, tinted with Van Dyke brown, rose lake, and burnt umber to make a chocolate brown, rub in well, clean off thoroughly and set aside for 48 hours in a warm room.

Brush on thoroughly a coat of good floor varnish, allowing from five to seven days for drying. Sand with a split 6-0 paper, dust off, and revarnish. If necessary dry, sand, revarnish for the third coat, which should then be rubbed down with felt pad, FF pumice stone and water, or crude petroleum oil to the desired finish.—R. G. Waring.

Shellac Troubles

Q. 471. Please tell me what causes the shellac to turn a muddy off color. I have been using orange shellac over mahogany water stain and by the time the second or the third coat is on, a brownish muddy color appears. I have changed the shellac and also bought a high-proof alcohol and know that the stain is of a good quality.—A. L. M.

A. Your whole trouble is the result of attempting to produce a finish with the use of shellac alone. This is not practical even though some furniture factories persist in attempting it and as a result constantly experience the trouble you mention. The discoloration or muddiness as you express it is caused by the use of too heavy a coat and the absorption of moisture by the alcohol during the drying of the film of shellac.

Primarily shellac has but one place in the finishing schedule, that of a sizing material directly following the complete drying of the water stain. Stock shellac purchased on the open market is cut from four to five pounds of gum per gallon of alcohol, The proper proportion for a sizing material would be not more than two pounds of gum per gallon and on hard woods, birch for instance, a one and a half pound cut is to be preferred. Your stock material therefore should be of the "special" denatured formula and not the complete formula. The special formula consists of ninety per cent ethyl or grain alcohol and ten per cent methyl or wood alcohol. This is the most desirable for shellac use. The complete formula uses ninety per cent ethyl alcohol, five per cent methyl alcohol and five per cent benzine. The latter is sufficient to cause a sticky or soggy shellac coat and should not be purchased if it can be avoided.

Preferred method would be to use a water stain, dry without sanding; size with one and a half to two pound cut of shellac; dry hard; sand with a split 6-0 paper, dust off and varnish one or two coats with three to five days between coats if a thin finish is desired. Rubbing with felt pad, pumice stone and crude oil will successfully imitate the dull shellac finish and offer something infinitely more durable than the shellac which is easily marred and frequently turns white during periods of muggy weather. —Ralph G. Waring.

Circassian and American Walnut

Q. 460. Is any of the furniture sold as "Circassian Walnut" made from walnut of Circassia, Russia, or is all of it just plain American gum and black walnut burl?

A. Most of the Circassian Walnut offered on the market today is made from genuine veneers, the logs for which did come from Russia. I do not believe that any American walnut burl is sold as Circassian Walnut, because I have never seen any figure which is similar enough to warrant such a claim. It is possible that some figured gum is sold as Circassian Walnut, in that it can be finished to give a similar appearance. According to many manufacturers of furniture who before the war turned out Circassian Walnut products, there is little demand at present for this class of goods. American Walnut figured stock has supplanted it, because American Walnut burls develop a more beautiful grain than Circassian Walnut has.—Ralph F. Windoes.

Waxes and Floor Finishes

Q. 461. What are the relative merits of mineral wax, beeswax, and Brazilian wax? Would it be good practice to use a mixture of wax and filler on oak floors which have already been filled and given a coat of shellac? And if not, what is a good formula for a liquid wax for the above mentioned purpose?—A. P. D. A.

A. Beeswax is the solid, fatty material derived from melted honey comb and is generally put through some form of refining process in order to remove the traces of honey which would cause stickiness and to effect some degree of bleach. Up to the present time it is the principal ingredient of high grade floor waxes but has two undesirable features. It appears to be practically impossible to completely remove the honey, for which reason the wax will absorb traces of moisture from the air and cause a loss of luster in the finished product. It is also somewhat soft and, therefore, lacking in durability. In order to overcome these defects mineral wax, otherwise known as ozokerit or ceresin, is added in varying proportions according to the type of wax desired. Ozokerit resembles paraffine wax in its composition and is largely employed as a substitute for beeswax, which it closely resembles in appearance and properties in the grade known as ceresin. This will increase the polishing properties and to some extent produce a harder surface than the beeswax alone.

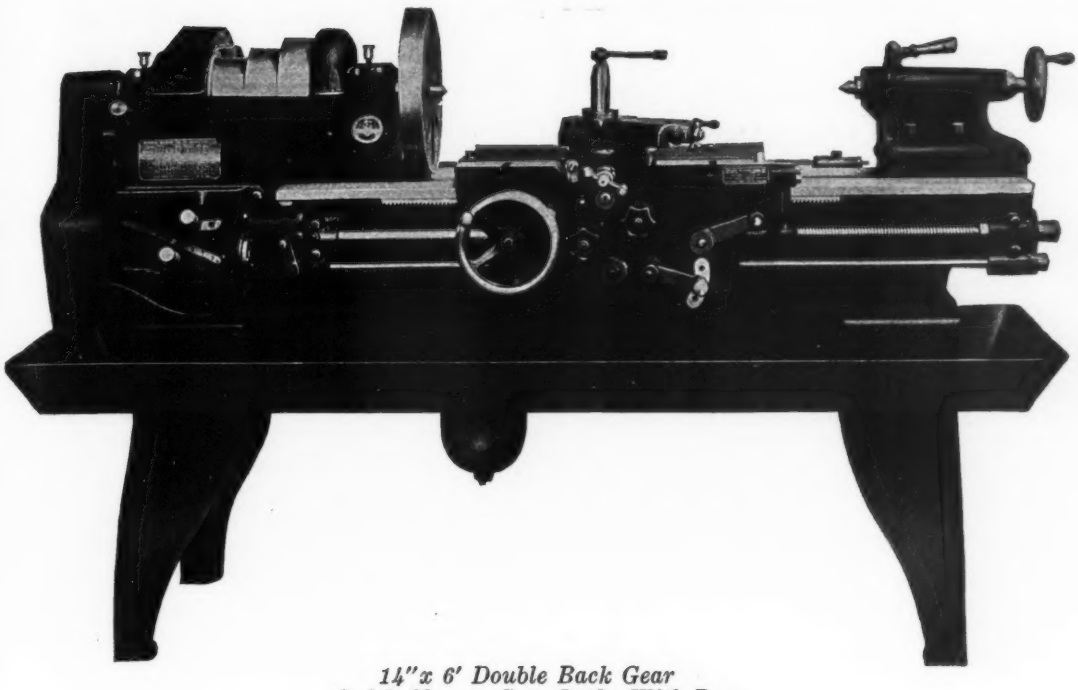
Brazilian or Japan wax is collected from the berries of the several sumac species found in Brazil, Japan and China. It is imported into this country in the form of slabs of a creamy colored, hard substance. Its luster is but slight and because of its crystalline condition is somewhat harder than either of the preceding materials.

It is quite undesirable to mix your own polishing wax since it requires careful processing and powerful mixing to produce practical results. It is much better to use a high grade material such as Butcher's Old English than it is to attempt to prepare a home made mixture which seldom gives like results in different batches.

In the treatment of oak floors which have been shellaced a coat of filler should then follow and be allowed at least two days of drying. It may then be desirable to give a second coat of shellac, carrying not more than two pounds of gum to the gallon of alcohol. When this has thoroughly hardened after five to eight hours, the wax may then be inclosed in a double layer of cheesecloth and applied to the floor. Let harden for half an hour and polish with a weighted brush. For a final polish the bristles should be covered with a piece of new body Brussels carpet, and the desired polish may then be secured. Avoid liquid waxes.—R. G. Waring.

Agricultural Education. The agricultural education situation in Tennessee is said to be the most promising since its organization. The most important development during the year has been the evening class work. Sixty-six courses have been conducted with farmers in 39 schools and 1,264 were in attendance. In one community, 35 farmers took work once a week for nineteen weeks and the result was that all kinds of livestock were standardized and only purebreds are now being raised.

The enrollment in vocational agriculture shows 2,807 in the all-day schools, 1,264 in the evening work and 1,195 in the junior-project work in rural schools. This makes a total of 5,266 people taking instruction in vocational agriculture. The project profits for the year ending June, 1923, were $365,069. There was spent for this work during the year $151,108.



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I.A.M. 6-24

NEWS AND NOTES FROM THE FIELD

Trust Fund for Trade School. Through a gift of $20,000 made in 1905 by two sisters, the city of Watertown, N. Y., will be enabled to finance a trade school and community building. Since the original gift was made the amount has been more than doubled so that the sum of $41,000 is now available. Another wealthy citizen has offered to provide a community building and assembly hall in connection with the school.

Vocational Work for Misfits. A plan for reducing the number of misfits in schools, business and industry has been provided in the 1924 program of the vocational service for juniors at Brooklyn, N. Y., which has been issued by the director, Dr. Mary Holmes Stevens Hayes. The program includes vocational guidance for children in schools, scholarships for those who would otherwise be required to withdraw, and employment for those pupils who have left school. The organization has a budget of $60,000 with which to carry on this work. It is a non-commercial organization which had its origin in the merger of several non-commercial employment agencies during the war under the name of the Junior Division of the United States Employment Service.

Brick-Laying School. A building to accommodate 200 boys has been erected at Grand Rapids, Mich., by the Associated Building Employers where courses in brick-laying and plastering may be offered.

Vocational Department. An appropriation of $10,000 has been authorized for the establishment of a vocational department in the Alliance high school at Birmingham, Ala. A number of former war veterans will benefit by the work offered in this department.

Vocational School. The East High School at Minneapolis, Minn., will open next fall as a vocational and teacher training school. The school is the first step in the direction of the proposed technical high school.

First Graduate. Mr. Joseph V. Segner is the first student to graduate from the evening vocational school at Wilmington, Del. Mr. Segner completed a four-year course in mechanical drawing, and a diploma was presented to him on the evening of March 27th. There were 672 certificates given to pupils attending three-quarters of the term and completing satisfactory work.

Build Farm Shop. The classes in farm mechanics at Jerseyville, Ill., recently completed the building of a farm shop. The students performed the work of construction and the school authorities furnished the material. The shop is equipped with tools for all kinds of farm repair work.

Extend Vocational Opportunities. Dr. Wm. H. Stone of the extension department of the University of Missouri has cooperated with the educators of Kansas City in a plan for extending vocational opportunities in the city high schools. New extension courses are planned in answer to complaints that graduates of city schools possess no fundamental knowledge of business, trade or industry.

Teach Trades. Mr. S. Christian Ericksen of Tacoma, Wash., has recently urged that pupils be given practical trade training after the completion of the ninth year. A month spent in California has convinced him that a good start has been made there in practical trade courses.

Opportunity Classes Popular. The part-time or opportunity classes conducted in business establishments at Dallas, Tex., have grown in scope and in popularity, according to Mr. J. O. Mahoney, director of the Dallas night schools. The classes are supported by the city board as a part of the school system and the courses are designed for the benefit of young men and women between the ages of 14 and 21 years. The classes are held during working hours and the employers give full time pay to those enrolled in the classes. Seven business houses have established such classes under the direction of expert teachers.

Trade Classes Approved. The local trades union at Aurora, Ill., has approved the proposed vocational trade course to be established in the West High School next fall. A total of 80 boys have registered for the work, more than 40 of whom are high school students and the remainder grade students who will soon enter the high school.

Students taking the work will pursue a two-year industrial course in building trades, to include the subjects of concrete work, carpentry, plumbing, electric wiring, sheet metal work, plastering, painting and inside finishing. The boys will give half a day to construction work and another half day to related school subjects.

Trade Classes Progress. The vocational trades and industries classes organized at Mobile, Ala., have attracted

(Continued on Page XXII)

A NEW SVENSEN BOOK

The Art of Lettering

by

Carl L. Svensen, Professor of Engineering Drawing, Ohio State University

Here is a new text that teaches both the method and application of lettering.

Splendidly illustrated with 96 full page plates remarkable for their careful execution and clear reproduction, it sets before the student a high standard of class work. The early plates accompanied by the text explanation teach instruments, methods and forms. Later plates show the appropriate use of various types of alphabets and the book is enriched by representative examples of the work of acknowledged experts.

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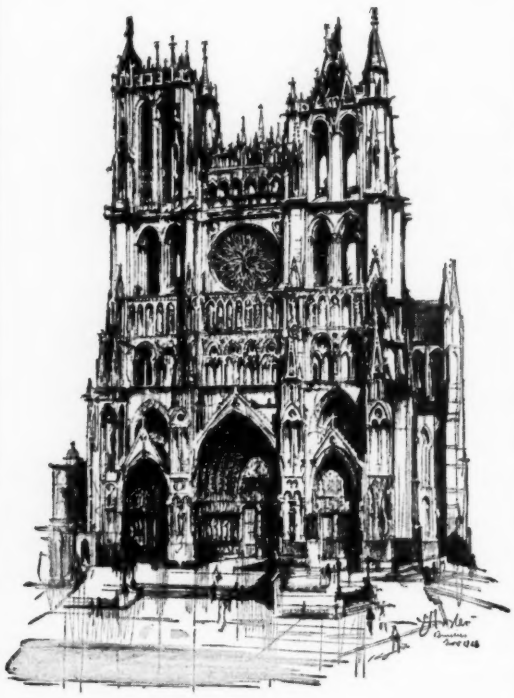

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(Continued from Page XX)

considerable attention. The classes include automobile mechanics, shop mathematics, mechanical drawing, painting and carpentry and are conducted under the supervision of Mr. L. E. Buswell of Barton Academy.

Second Vocational Conference. The second annual vocational conference of Kansas will be held June 9-12, at Pittsburg, Kans. Among the important speakers at this conference will be Dr. C. A. Prosser of Minneapolis, Minn.; Mr. L. S. Hawkins of the United Typothetae of Chicago, Ill.; Dr. Arthur D. Dean of Teachers College, Columbia University; Mr. C. M. Miller, state director of vocational education, Topeka, Kans.

Vocational Guidance. Vocational guidance on an extensive plan will be introduced in the public schools of Johnstown, Pa., next fall. Students entering the seventh grade will begin a course of instruction which will continue through six years of training. The instruction is intended to fit pupils for the vocation or profession they may wish to follow after graduation. Selections may be made from college preparatory, technical, professional, teaching, practical arts for boys and girls and commercial subjects.

The course consists of the pupil's history from the date he enters school until graduation. It represents a plan of cumulative information with reference to the individual pupil in use in the schools of Baltimore and Cincinnati.

A complete reorganization of studies is planned in connection with the course as a means of tying up one grade with another. The last years of school work will be bound together in group courses with the attainment of the seventh grade and teachers are assigned to individual pupils in each class of work in the junior and senior high schools.

Beginning with the eighth grade, from information collected during the first seven years, the teachers are enabled to advise pupils with reference to particular qualifications to guide them in selecting any work they wish to take up.

Teacher-Training Course. A teacher-training course for evening vocational schools has been established at Wilmington, Del. The course covers six weeks and is intended to train master craftsmen to teach in vocational schools. Teachers satisfactorily completing the course are given certificates permitting them to teach in any part of the country. Classes are conducted in such subjects as printing, plumbing, automobile-mechanics, sheet metal, shop mathematics, electricity, stationary engineering, oxy-acetylene welding, and textile crafts.

Sculpture Exhibit. An interesting exhibit of stone and marble carving and clay modeling was held on March 18th, at the Manual Training Vocational Trade School, at Denver, Colorado. Stone carving is a new subject in the school and has attracted seven pupils. The stone used for the work is obtained near Del Norte and is said to be the finest stone for modeling work.

Boys Build Own School. The boys of the Essex County (N. J.) Vocational School have begun the construction of a new building to house the increased enrollment. The boys who range from 14 to 18 years in age have prepared the plans for the building and have attempted all the work with the exception of the foundation.

The plans call for a two-story building to be erected in the rear of the present structure. All carpentry, cabinet joinery, electrical equipment, plumbing and painting will be done by the boys. The estimated value of the building was $10,000. The plans provide for three classrooms and one draughting room and increases the capacity of the school to 200 students.

First Graduation Exercises. The first graduation exercises of the New Bedford, Mass., Vocational School were held on March 24th at the Vocational School. A total of 188 pupils was graduated on this occasion. The present school was opened in 1911-1912 for classes in sewing, millinery, cooking and accommodated about 150 women and ten teachers.

Mine Training in Pennsylvania. During the current year the Pennsylvania Department of Public Instruction has been active in stimulating the operation of industrial evening schools in the anthracite and bituminous regions. As a result of this work, schools have been opened in 32 school districts and more than 1500 men have been enrolled in classes. The schools conducted this year represent a growth of fully 400 per cent. The classes are for the purpose of increasing efficiency and promoting safety

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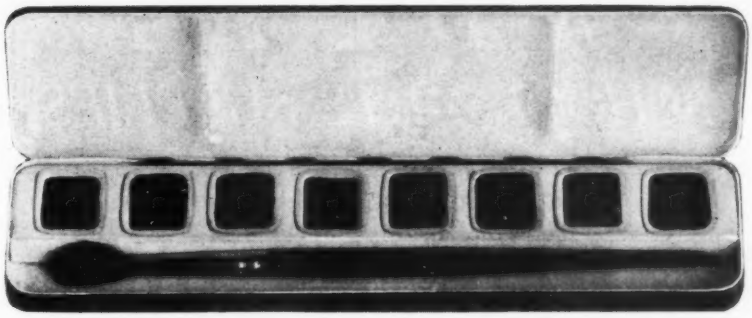

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That is why school boards in many of our largest cities, in their requirements for art instruction materials, continue to specify "Prang or equal." That is why leading color experts still make the unqualified statement that there are no better school water colors made than those bearing the Prang name.

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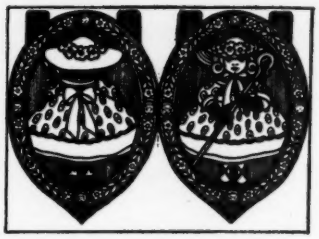

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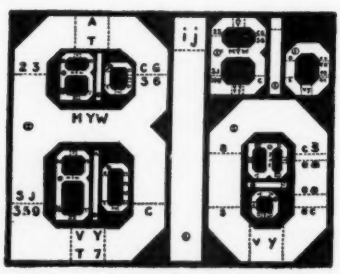
No. 8324—Forty-two plates in the art and practice of lettering for students and designers of commercial work. Many styles of letters are included, bold poster, Gothic, Roman, Light Line, Italic, etc., with charts showing their formation. The most complete work devised for practical school use. No one is better qualified to handle this subject than Mr. Jacobs, and he has embodied in this series the styles and sizes of letters most necessary to school work. Enclosed in strong, attractive box. Price, $2.00.



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(Continued from Page XXII)

in mining operations. The instruction consists largely of technical courses preparing experienced miners for positions of fire boss, mine foremen, and assistant mine foremen.

Promote Trade Training. The Pittsburgh board of education has recently taken over the Allegheny Vocational School for the purpose of developing trade training. Mr. F. W. Boland, the director, has been retained by the board as director of trade training classes.

Revise Course of Study. A special committee has been appointed by the Pittsburgh board of education to revise and rewrite the courses in industrial education in elementary, junior high, senior high, and vocational schools. Prevocational classes have been started in three elementary schools.

Assignment Plan Method. At the Bethlehem, Pa., trade school, the usual classroom method of teaching related and academic work was superseded by the assignmen plan method. The principles of the Dalton Plan have been tried out. Under the plan, weekly assignments are prepared and given to the students. There are no regular class periods, but pupils are allowed to pass from one subject teacher to another. The progress of pupils is charted on a progress chart and the interest of pupils is increased one hundred per cent as a result of the experiment.

Trade Jobs. Among some of the jobs done by boys in the trade classes at Bethlehem, Pa., are the building of drill presses, arbor presses, lathes, jointers, bench millers, woodworking vises, band saws, double-headed grinder, belt sander and swing cut-off saw. From July, 1923, to March, 1924, the several classes completed 864 jobs having a value of $10,700.

Cabinet Work. The cabinet shop in the Altoona, Pa., schools has completed fifty teachers' desks for use in the new junior high school.

Railroad Class. A class in maintenance of railroad equipment was organized the past season by the railway club of Greenville, Pa., under the direction of the board of education.

New Electric Shop. A second-year electrical shop has been organized in the Williamsport, Pa., high school under the direction of Mr. T. L. Lyman. A large motor generator has been installed by the students to supplement the set already in use and special attention is given to convenience of carrying test circuits through the shop. A battery repair and charging stand has also been installed. The shop is used by second-year students who take conduit and power wiring, switchboard construction, armature and motor repair, battery repair and charging, and general electrical testing.

Industrial Survey. An industrial survey has been begun at Reading, Pa., for the purpose of determining the industrial training needs of the city.

Growth of General Shop Plan. The general shop plan is contemplated for the school districts of Ambridge, Carrick, Franklin, Kane, Latrobe, Meadville, Oil City, and Woodlawn, Pa., during the school year 1924-25. Teachers and administrators alike have been convinced of the advantages of this type of instruction over the one-activity shop.

Show Card Writing. A trade extension class in show card writing was successfully conducted at Johnstown, Pa., the past season.

Building Trades Class. A vocational evening class in carpentry was conducted the past season at Wilkes-barre, Pa.

Industrial Arts Society Meets. The industrial arts teachers of Delaware County, Pennsylvania, met at the Haverford Township High School where an organization known as the Industrial Society of Delaware County was formed. Mr. John J. Swan was elected president, and Mr. John J. Matthews secretary of the society.

Largest Evening School. Erie, Pa., had the largest evening school this year. More than 2,500 students were enrolled in five centers.

Annual Closing Exercises. The third annual closing exercises of the Evening Vocational school at Atlantic City, N. J., were held early in March. Mr. John A. McCarthy, assistant commissioner of industrial education, was the principal speaker of the evening. The Evening Vocational School was opened in October, 1921, with four departments and 83 students. This year there were fifteen departments with an enrollment of 536 students.

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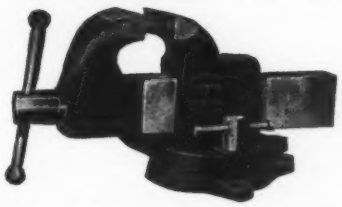
You can get Columbian Vises for every department of your school.



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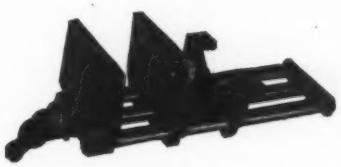

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Architectural Courses. Courses in architectural design and outdoor sketching will be offered in the summer school of Carnegie Institute, Pittsburg, under the direction of Mr. J. V. Wilson of the firm of Wilson and Mitchell, of Pittsburgh. In addition, there will be courses in descriptive geometry, shades and shadows, perspective and analytical geometry given under the direction of the department of architecture. The work has been arranged for undergraduates and architects desiring further training and the courses extend over a period of six weeks, from June 16th to July 26th.

Larger Quarters Needed. Larger quarters have been requested for the Automotive Trade School at Cincinnati to accommodate the requirements of the expanding department. The present industrial arts building is to be remodeled to supply additional room for the automotive repair work.

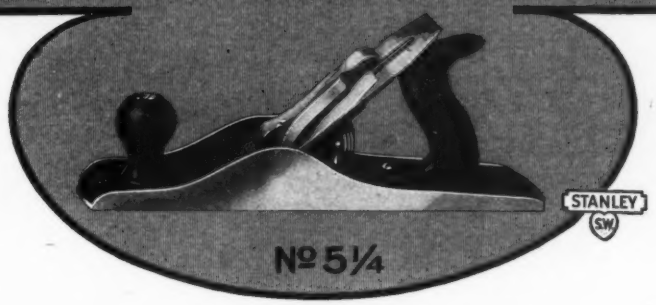
Ceramic Engineering. The state of Pennsylvania has taken steps to provide training in the clay industries by offering a four-year course in ceramic engineering at the State College. The annual output of the clay product industries of the state is valued at $31,000,000, which gives a rank of second in the production of pottery, tile, glassware and other ceramics.

Poster Designs. A number of excellent posters appropriate to the "Be Kind to Animals Week" were made by the art departments of the various Cincinnati high schools. The designs for the posters were cut on linoleum blocks and reproduced in the school print shops.

Cover Design Contest. The Fifth Avenue Association of New York City has announced a prize cover design contest which is open to all artists, illustrators and designers. The Association offers a cash prize of $500 for the best cover design for a historical book of Fifth Avenue to be used in connection with the Centennial Celebration of the Opening of the Avenue. Entries must be in the offices of the Association not later than May 20th. The decision of the jury of award is to be announced on June 15th.

(Continued on Page XXIX)

STANLEY Planes



Stanley Bailey Plane No. 5¼, accepted by School Authorities as the standard for Manual Training Work

STANLEY
NEW BRITAIN, CONN. U.S.A.
THE STANLEY WORKS – THE STANLEY RULE & LEVEL PLANT

(Continued from Page XXVI)

Vocational Rehabilitation. Vocational rehabilitation is a comparatively new addition to the state of Tennessee. It is a means of offering to disabled boys and girls something like an equal chance with the physically sound and normal boys and girls. Since the beginning of the work in 1921, the division has placed in training 375 and has returned to profitable employment approximately one hundred who are enabled to earn a living for themselves. The people trained by this division in the year 1922-23 cost Tennessee approximately $11,000; they earned about $40,000 after training.

Brick-layers' Course. The school board of Nashville, Tenn., has provided a course of training for brick-layers' apprentices employed by local contractors. The course consists of four hours of instruction in brick-laying each week, and four hours of evening instruction in related subjects. Apprentices are required to attend evening classes. They are paid for the four hours of daytime instruction.

Opportunity School. The board of education of Knoxville, Tenn., has opened an opportunity school for boys and girls employed in the uptown section of the city. Employers cooperate by allowing their younger employees to attend school during the hours when they can best be spared from their work. The work is intended to help boys and girls make up deficiencies and to help them solve the problems of everyday life.

Continuation School. A continuation school for messenger boys in telegraph service has recently been opened at Watkins Institute, Nashville, Tenn., with an enrollment of 25 boys from the Western Union Company. Classes for groups from other occupations are about to be organized.

Old Furniture Week. During the week of March 24th old furniture week was observed in the advanced manual training class of the Memorial High School, Orlando, Fla. Old pieces of furniture in need of repairs or refinishing were brought in for the needed attention. Patrons were allowed to bring in articles of furniture which were placed in good condition at a minimum cost.

Prevocational Class. A prevocational class has been established at Syracuse, N. Y. The work is limited for the present to wood working and sheet metal work. The course is intended to hold pupils in school after reaching the age where they are permitted to withdraw.

Propose Trade School. The board of education at Schenectady, N. Y., has in contemplation a plan to remodel the Union Street School as a trade school for over-age pupils, with trade, shop and various other mechanical studies.

Survey of Vocational Needs. Plans for a survey of vocational needs have been outlined by the school board of Reading, Pa. The survey is to be similar to that conducted for the building plant. The plan is to include all pupils and is to broaden the opportunities for boys who desire to become skilled in the various trades.

It is announced that the National Society for Vocational Education will meet at Indianapolis, Indiana, December 11-13, 1924.

The new McKinley vocational school at Buffalo, N. Y., was dedicated with addresses by Superintendent E. C. Hartwell, Lewis A. Wilson, state director of vocational education and Francis H. Wing, supervisor of industrial education. Samuel F. King, the principal of the school presided.

In the commercial high school of Worcester, Mass., according to Miss Laura Carrigan, less than one per cent of the students follow their father's vocation. In the boys' trade school about five per cent, according to Director Albert J. Jameson, following the occupation of their fathers. In the continuation school, according to Miss Clover G. Knowlton, more than nine per cent will follow the vocational footsteps of their parents.

Agencies for providing an organized system of vocational guidance have been set in motion by the Chamber of Commerce of Indianapolis, Indiana. In line with the plan Dr. H. D. Kitson of the Indiana University has been engaged to do the preliminary research work.

The De Pere, Wis., school authorities have invited Mrs. Glenn Turner of the state vocational department to make a survey of the city in order to determine what number of boys and girls ought to attend the public, parochial, or vocational schools.

The proposal to discontinue manual training was voted down by a large majority at the town meeting of Southboro, Mass.

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Starrett Tools

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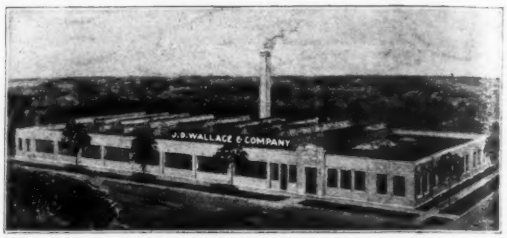
BUYERS' NEWS

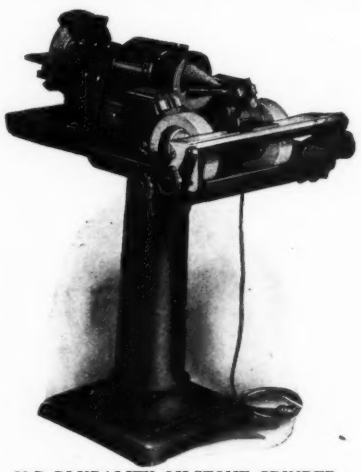
Occupy New Building. The J. D. Wallace Company, of Chicago, manufacturers of the well-known Wallace portable machines, has just occupied its new factory building at 134-158 South California Avenue.



THE NEW PLANT OF J. D. WALLACE & CO.

The new building is a model of modern manufacturing practice. It is of the one-story fireproof type of construction with all operations confined to one floor. The manufacturing and assembling is operated on a specialized progressive plan so that each machine moves steadily forward until completed, tested and ready for shipping.

Plurality Oilstone Tool Grinder. The Mummert-Dixon Company of Hanover, Pennsylvania, has just issued a descriptive bulletin of their new No. 475 Plurality Oilstone Tool Grinder illustrated above. This is a most convenient, serviceable and efficient tool sharpening machine, having five basic units in one—a coarse oilstone wheel, a fine oilstone wheel, a grinding cone, a leather stropping wheel, and an emery wheel, all accessible from two adjacent sides. A copy of this bulletin will be sent on request to readers of the "Industrial-Arts Magazine."



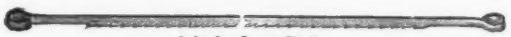
M-D PLURALITY OILSTONE GRINDER.

Drawing Instruments (American Made) is the interesting and significant title of the new Pease Catalog C-24. The booklet illustrates and describes the entire line of high grade instruments manufactured in the Chicago factory of the C. F. Pease Company, and includes the various sets assembled by the firm in standard combinations, as well as a very complete line of compasses and dividers. The Chicago line of drawing pens is the most exclusive manufactured in the United States. The booklet includes a number of sets especially arranged for school use. These are extremely economical in cost, but of the same high grade as the general line.

Pexto Tools. The Peck, Stow & Wilcox Company of Southington, Conn., has just issued a very interesting four-page circular on the Pexto tools, including a complete list of standard sheet metal equipment for school shops, together with a floor plan of a classroom for sheet metal work.

Everyday Art. The American Crayon Company of Sandusky, Ohio, has just published the April, 1924, issue of Everyday Art, a very interesting little booklet containing items of art interest, several short articles on design, and an article on the need of organized effort in art teaching.

GRIFFIN
COPING SAW BLADES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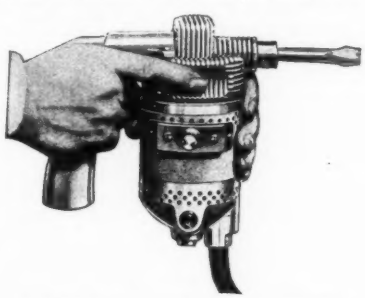
NEW TRADE PRODUCTS

Portable Electric Screw Driver. The John Steptoe Co., of Cincinnati, O., has recently acquired the manufacturing and selling rights of the Automatic Electrical Tool Company, and will now market its own portable electric tools, specializing in electric screw drivers, drills for wood and lag-screw drivers.

The electric screw driver marketed by the firm is especially suited for woodwork and cabinet work because of its light weight and portability. It has a weight of only five pounds and is capable of driving a No. 12 screw in pine as easily as a smaller one. It is provided with a suitable pistol grip handle and bit and may be used either for driving or taking out screws.

The automatic lag-screw driver is a handy tool for the millwright in putting up countershafts, or for lagging



THE NEW STEPTOE SCREW DRIVER.

machines to platforms. The tool is provided with an improved switch which automatically shuts off the current when the full capacity of the machine is reached.

The Steptoe Company is recognized as a manufacturer of high grade machine tools and has been identified with the machine tool industry for three-quarters of a century.

Information and descriptive circulars concerning the Steptoe tool products are available upon request by any school shop instructor.

SUMMER VOCATIONAL CONFERENCES IN KANSAS

The summer conferences in vocational education for teachers and supervisors of Kansas schools will be divided into two sections, the first to be held June 6-7 at the Kansas Agricultural College, Manhattan, and the second to be held June 9-12 at the State Teachers' College, Pittsburg. The conferences are being arranged with the cooperation of the State Board for Vocational Education and will be in charge of Mr. C. M. Miller, Director, at Topeka, Kans.

The first section will offer conferences in vocational agriculture, home making, and community welfare. The second section will enjoy conferences in industrial arts, home making, building trades, printing and administration. The conferences will close with a men's dinner at which Mr. C. M. Miller of Topeka, will preside as toastmaster.

PERSONAL NEWS

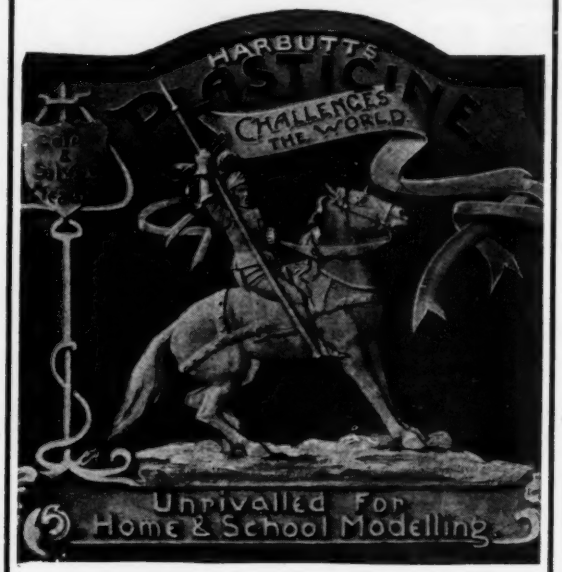
Mr. A. M. Bleyer, director of the vocational school at Oshkosh, Wis., has been reappointed for a three-year term.

Mr. Herbert Helig of Arkadelphia, Ark., has been elected head of the vocational school at Appleton, Wis., succeeding W. S. Ford.

Mr. O. H. Bishop, formerly at the East High School, Erie, Pa., has accepted a position at Utica, N. Y. Mr. H. F. Geldmeier has been appointed to succeed Mr. Bishop at the high school, while Mr. L. M. Sperry has been named to take the place of Mr. Geldmeier.

Shop Teachers' Paper. The shop teachers of San Diego City and County, California, have issued a school paper devoted to the interests of industrial and vocational education. The paper describes the courses and the work carried on in the several vocational departments in 26 high schools and several grade schools. The paper has for a cover design a typical shop scene, reproduced in

New England Conference. The vocational conference for the states of Maine and New Hampshire will be held May 22-24, at the Bangor High School, Bangor, Me. Among the important speakers will be Mr. L. A. Wilson of New York State; Mr. J. C. Wright of Washington, D. C.; Mr. F. J. Trinder of Connecticut; Mr. S. W. Shoemaker of Pennsylvania; Mr. E. T. Franks of Kentucky; Mr. L. H. Dennis of Harrisburg, Pa.; Mr. S. Rogers of New York; Mr. R. L. Cooley, of Milwaukee, Wis., and Mr. A. O. Thomas, Augusta, Me.



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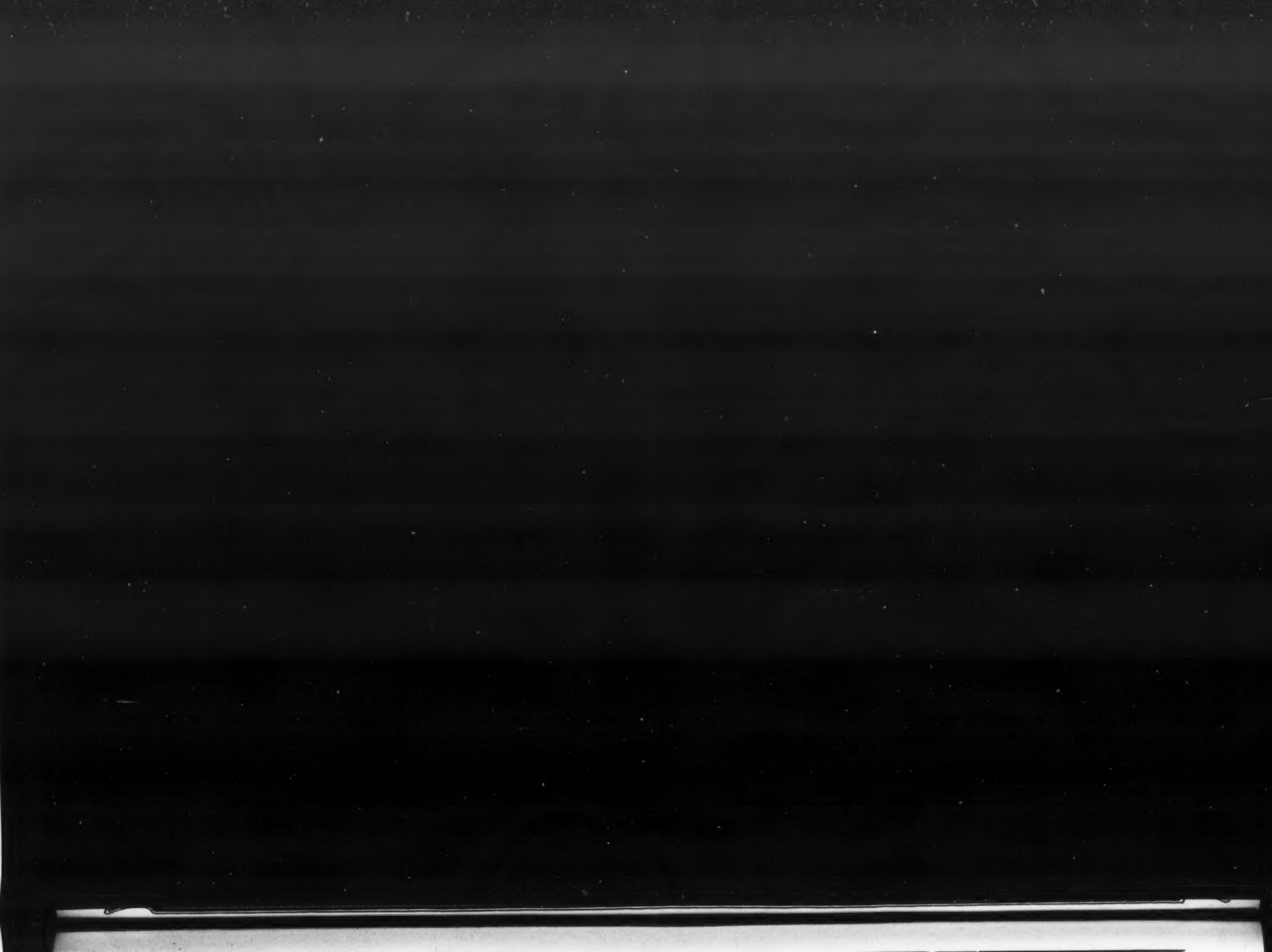
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